STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
DESIGN DIVISION
NASHVILLE, TENNESSEE 37243-0348

INSTRUCTIONAL BULLETIN NO. 12-08

Regarding Revised Standard Drawings and Section V of the Design Guidelines

Effective for the September 2012 Letting (July 11 Turn-in), the following Standard Drawings and Section V of the Design Guidelines are revised. If these drawings are used prior to the effective date they shall be identified on the lower left side of the index sheet **"To be printed with plans."** After July 11, 2012 the standard drawings will be effective and no longer will be printed with plans. This Instructional Bulletin will be void after July 11, 2012.

DRAWING NUMBER	CURRENT REVISION DATE	DESCRIPTION
D-SEW-12D	4-20-2012	CONCRETE ENDWALL TYPE "SD" WITH STEEL PIPE GRATE
S-GR-14	4-17-2012	W-BEAM BARRIER FASTENING HARDWARE AND BRIDGE APPROACH DELINEATORS
S-SSMB-9		SINGLE SLOPE BARRIER WALL FOR GRADE SEPARATED MEDIAN
T-S-10	4-4-2012	STANDARD MOUNTING DETAILS FLAT SHEET SIGNS ALUMINUN-STEEL DESIGN
T-WZ-10	4-2-2012	ADVANCE ROAD WORK SIGNING ON HIGHWAYS AND FREEWAYS
T-WZ-15	4-2-2012	INTERIOR LANE CLOSURE ON FREEWAYS OR EXPRESSWAYS
T-WZ-19	4-2-2012	MEDIAN CROSS-OVER DETAIL ON DIVIDED HIGHWAYS
T-WZ-35	4-2-2012	TRAFFIC CONTROL PLAN PAY ITEMS AND SIGN DETAILS FOR TRAFFIC SIGNAL AT TWO LANE BRIDGE RECONSTRUCTION SITE
T-WZ-36	4-2-2012	LANE CLOSURE ON LOW-VOLUME 2-LANE HIGHWAY
T-WZ-40	4-2-2012	RIGHT LAME CLOSURES AT NEAR SIDE OF INTERSECTIONS
T-WZ-41	4-2-2012	LEFT LANE CLOSURES AT NEAR SIDE OF INTERSECTIONS
T-WZ-42	4-2-2012	CENTER LANE CLOSURES AT NEAR SIDE OF INTERSECTIONS
T-WZ-50	4-2-2012	TRAFFIC CONTROL FOR SIGNALS ONLY PROJECTS ON 2 OR 3 LANE MAJOR ROUTES
T-WZ-51	4-2-2012	TRAFFIC CONTROL FOR SIGNALS ONLY PROJECTS ON 4 OR 5 LANE MAJOR ROUTES

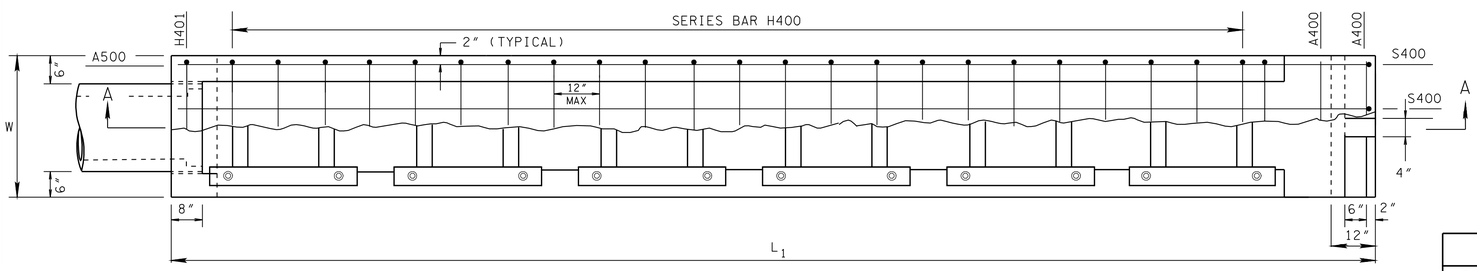
T-WZ-52	4-2-2012	TRAFFIC CONTROL FOR SIGNALS ONLY PROJECTS ON 4 OR 5 LANE MAJOR AND MINOR ROUTES
T-WZ-53	4-2-2012	TRAFFIC CONTROL FOR SIGNALS ONLY PROJECTS ON 4 OR MORE LANE DIVIDED MAJOR ROUTES
T-WZ-54	4-2-2012	TRAFFIC CONTROL FOR SIGNALS ONLY PROJECTS ON 4 OR MORE LANE DIVIDED MAJOR ROUTES AND 4 OR MORE LANE MINOR ROUTES

Copies of the revised standard drawings are attached.

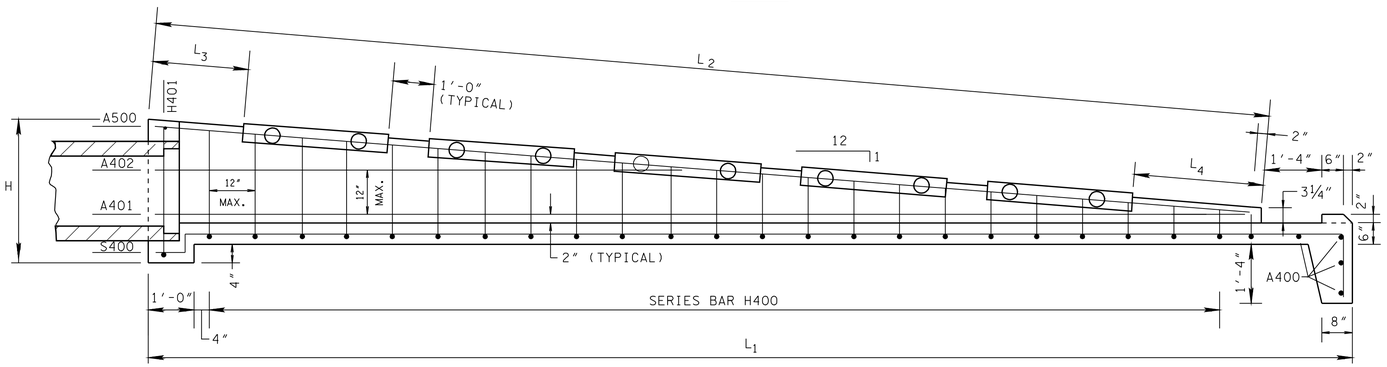
Carolyn Stonecipher

Carolyn Stonecipher, P.E.,
Civil Engineering Director
Design Division

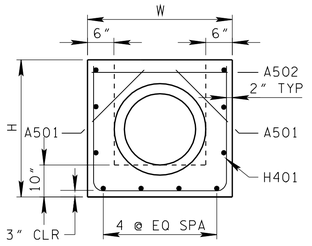
May 7, 2012
CS:ARH:MWC
Attachment



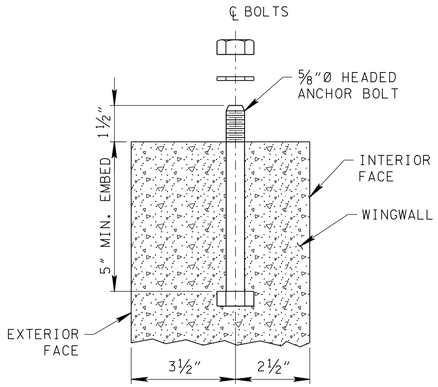
PLAN



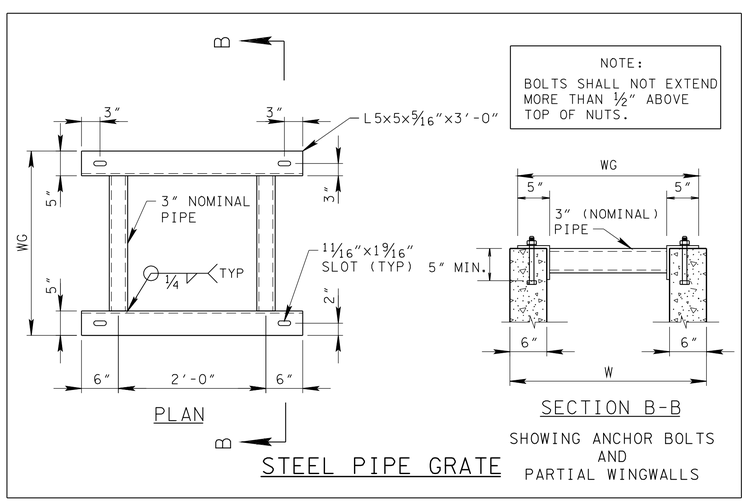
SECTION A-A



HEADWALL ELEVATION



ANCHOR BOLT ASSEMBLY



PLAN

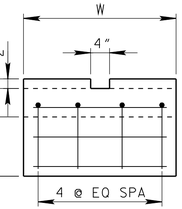
SECTION B-B

SHOWING ANCHOR BOLTS AND PARTIAL WINGWALLS

STEEL PIPE GRATE

ALTERNATE ANCHORS FOR STRUCTURAL STEEL GRATES

CERTIFICATION:
DRILLED-IN EPOXY ANCHORS OR CAST-IN THREADED INSERTS MAY BE UTILIZED IN LIEU OF CAST-IN HEADED ANCHOR BOLTS PROVIDED THAT THE CONTRACTOR FURNISHES CERTIFIED ANCHOR PULL OUT DATA FROM AN INDEPENDENT TESTING LABORATORY USING CLASS "A" CONCRETE AS PRESCRIBED BY TENNESSEE HIGHWAY SPECIFICATIONS. THE REQUIRED ULTIMATE LOAD FOR ¾" DIAMETER ANCHORS IS 10,000 POUNDS.



TOEWALL ELEVATION

GENERAL NOTES

1. CONCRETE ENDWALL SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD SPECIFICATIONS, SECTION 611 AND/OR SPECIAL PROVISIONS.

2. THE MATERIALS, WELDING AND PAINTING FOR STRUCTURAL STEEL GRATE SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS:
   - (A) ANGLES ASTM A36
   - (B) STEEL PIPE ASTM A53, TYPE E, GRADE B, STANDARD WEIGHT (SW)
   - (C) WELDING AASHTO/AWS D1.5M/D1.5 BRIDGE WELDING CODE (LATEST EDITION)
   - (D) THE GRATE SHALL BE PAINTED BLACK, FEDERAL SPECIFICATION TT-E-489J, AFTER FABRICATION.

3. THE MATERIAL AND GALVANIZING FOR BOLTS, NUTS AND WASHERS SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS:
   - (A) BOLTS, NUTS AND WASHERS ASTM F1554 GRADE 36
   - (B) GALVANIZING ASTM A153

4. THE COST OF FURNISHING BOLTS, NUTS AND WASHERS, INCLUDING ALL MATERIALS, LABOR AND INCIDENTALS NECESSARY TO COMPLETE THE INSTALLATION, SHALL BE INCLUDED IN THE PRICE BID FOR PIPE ENDWALL.

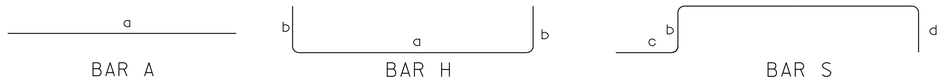
5. PIPE OPENINGS FOR HEADWALLS ARE BASED ON REINFORCED CONCRETE PIPE WITH TYPE "B" WALL THICKNESS (AASHTO M170).

5. PAYMENT WILL BE MADE UNDER:

ITEM NUMBER 611-07.01, CLASS "A" CONCRETE (PIPE ENDWALLS)----CUBIC YARD.
ITEM NUMBER 611-07.02, STEEL BAR REINFORCING (PIPE ENDWALLS)----POUND.
ITEM NUMBER 611-07.03, STRUCTURAL STEEL (PIPE ENDWALLS)----POUND.

BILL OF STEEL

			15" PIPE						18" PIPE					
			BENDING DIMENSIONS				NO. REQD.	LENGTH	BENDING DIMENSIONS				NO. REQD.	LENGTH
			a	b	c	d			a	b	c	d		
A400	TOEWALL	4	2'-6"	——	——	——	4	2'-6"	2'-9"	——	——	——	4	2'-9"
A401	WINGWALLS	4	19'-1"	——	——	——	2	19'-1"	10'-0½"	——	——	——	2	10'-0½"
A402	WINGWALLS	4	7'-1"	——	——	——	2	7'-1"	22'-0"	——	——	——	2	22'-0"
A500	WINGWALLS	5	20'-9"	——	——	——	2	20'-9"	23'-8"	——	——	——	2	23'-8"
A501	HEADWALL	5	1'-7¼"	——	——	——	2	1'-7¼"	1'-8⅝"	——	——	——	2	1'-8⅝"
A502	HEADWALL	5	2'-6"	——	——	——	1	2'-6"	2'-9"	——	——	——	1	2'-9"
H400	BOTTOM SLAB AND WINGWALL	4	2'-6"	*	——	——	1	97'-11"	2'-9"	*	——	——	1	102'-11"
			*DIMENSION "b" VARIES FROM 1'-11⅞" TO 0'-4⅞" IN INCREMENTS OF 0'-1" (20 BARS)						*DIMENSION "b" VARIES FROM 2'-2 ⅞" TO 0'-4 ⅛" IN INCREMENTS OF 0'-1" (23 BARS)					
H401	BOTTOM SLAB AND HEADWALL	4	2'-6"	2'-4⅞"	——	——	1	7'-3¾"	2'-9"	2'-7⅞"	——	——	1	8'-0¾"
S400	BOTTOM SLAB AND TOEWALL	4	21'-11"	0'-4½"	0'-8"	1'-4"	4	24'-3½"	24'-10"	0'-4½"	0'-8"	1'-4"	4	27'-2½"



REINFORCING STEEL CODE

TYPE	SIZE	SERIES
A	5	06

DIMENSIONS SHOWN ON THIS SHEET ARE OUTSIDE TO OUTSIDE OF BAR.

STANDARD C.R.S.I. HOOK DETAILS SHALL APPLY, EXCEPT AS NOTED.

SPLICING OF REINFORCEMENT IS ACCEPTABLE PROVIDED THAT A MINIMUM 21" SPLICE LENGTH IS USED.

REINFORCING STEEL LEGEND

DIMENSIONS AND QUANTITIES FOR ONE ENDWALL

PIPE CULV. DIA.	CONCRETE ENDWALL DIMENSIONS						STRUCTURAL STEEL GRATE DIMENSION AND QUANTITY		ESTIMATED QUANTITIES		
	H	L_1	L_2	L_3	L_4	W	WG	NO. REQ'D	CLASS "A" CONCRETE CU. YD.	STEEL BAR REINF. LB.	STRUCT. STEEL LB.
15"	2'-10¼"	23'-0"	21'-0⅞"	2'-2"	3'-10⅞"	2'-10"	2'-7"	4	2.32	224	354
18"	3'-1¼"	25'-11"	24'-0"	2'-2"	2'-10"	3'-1"	2'-10"	5	2.84	253	461

REV. 7-28-84: CHANGED MATERIAL SPECIFICATIONS FOR STRUCTURAL STEEL PIPES AND PAINT SPECIFICATIONS.

REV. 3-20-86: CHANGED FEDERAL PAINT SPECIFICATION.

- REV. 7-29-92: REDREW, RENAMED AND REORGANIZED SHEET. CHANGED SHEET NUMBER FROM D-PE-12 TO D-SEW-12D. CHANGED ENDWALL FROM TYPE "U" TO TYPE "SD". UPDATED SPECIFICATIONS IN THE GENERAL NOTES, CORRECTED DIMENSIONS AND ESTIMATED QUANTITIES IN THE DIMENSION AND QUANTITY BLOCK. CORRECTED DIMENSIONS IN BILL OF STEEL.
- REV. 10-26-95: IN GENERAL NOTE (2) CHANGED MINIMUM WALL THICKNESS FROM 0.25" TO 0.216".
- REV. 1-19-97: CHANGED WEIGHT OF STRUCTURAL STEEL GRATES.
- REV. 5-27-99: CHANGED PAINT SPECIFICATION TO TT-E-489J.
- REV. 4-15-00: MODIFIED TOE WALL AND CLASS "A" CONCRETE QUANTITIES.
- REV. 5-27-01: CHANGED DESCRIPTION FOR ITEM NO. 611-07.03.
- REV. 6-1-09: ADDED GENERAL NOTE (6).
- REV. 7-19-10: DELETED GENERAL NOTE (6).
- REV. 3-1-12: REVISED REINFORCING STEEL, BILL OF STEEL, REINFORCING STEEL LEGEND, STEEL GRATE, ANCHOR BOLT DETAIL, ESTIMATED QUANTITIES FOR CLASS "A" CONCRETE, STEEL BAR REINF. & STRUCTURAL STEEL. REVISED GENERAL NOTES AND NOTE FOR ALTERNATE DRILLED IN ANCHORS.
- REV. 4-20-12: REVISED DIMENSIONS L3 AND L4 FOR BOTH 15" AND 18" ENDWALL.

☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

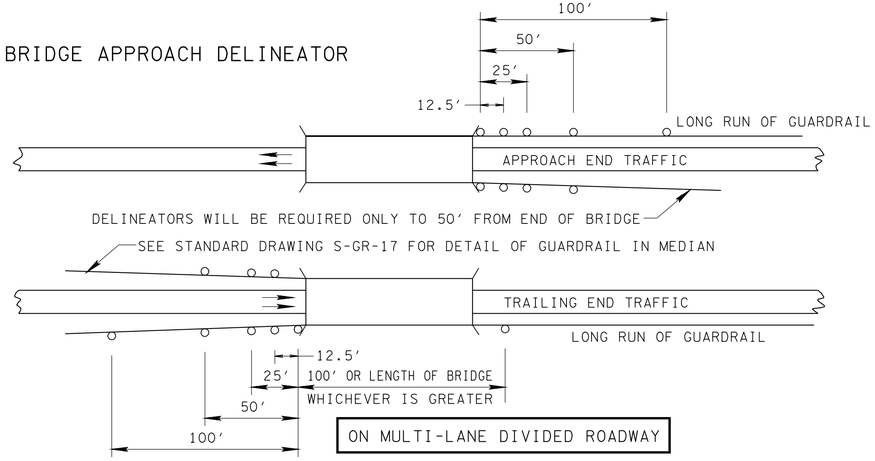
CONCRETE ENDWALL
TYPE "SD" WITH
STEEL PIPE GRATE

FOR 15" & 18" PIPES
12:1 SLOPE

NOT TO SCALE

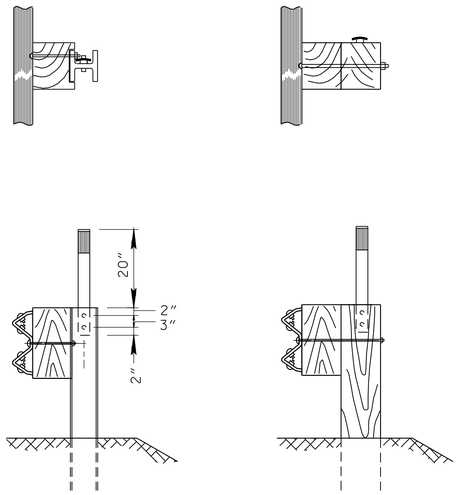
D-SEW-12D

BRIDGE APPROACH DELINEATOR



LOCATION OF BRIDGE APPROACH GUARDRAIL DELINEATORS

NOTE: "o" DENOTES GUARDRAIL DELINEATORS. (SHOULDER LINES AND GUARDRAIL POSTS NOT INDICATED.)



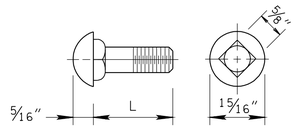
STEEL POST

WOOD POST

TYPICAL GUARDRAIL FLEXIBLE DELINEATOR INSTALLATION

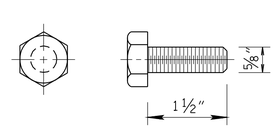
NOTE: SEE STANDARD DRAWING T-S-11 FOR OTHER DETAILS. DELINEATOR MAY BE FULL LENGTH BEHIND POST AS AN ALTERNATE.

W-BEAM BARRIER FASTENING HARDWARE



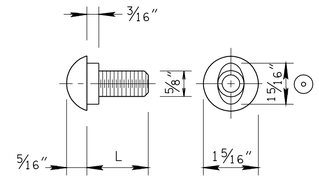
⅝″ DIAMETER CARRIAGE BOLT

THIS WASHER IS TO BE USED UNDER ALL BOLT HEADS AND NUTS SUBJECT TO TURNING WHEN TORQUED. ROUND WASHERS SHALL BE STEEL, GALVANIZED IN ACCORDANCE WITH AASHTO M232 SPECIFICATION.



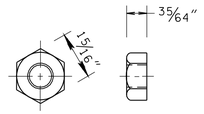
⅝″ DIAMETER HEX BOLT

(FOR FASTENING STEEL POST BLOCK-OUTS TO POSTS AND TO SPLICE TUBULAR W-BEAM RAIL ELEMENTS)

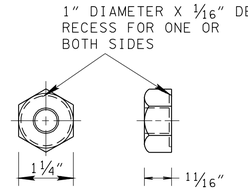


⅝″ DIAMETER BUTTON HEAD BOLT

⊙ TOLERANCES +1⁄16″ AND -1⁄64″

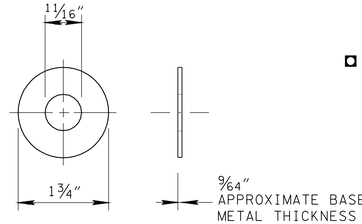


⅝″ DIAMETER HEX NUT



⅝″ DIAMETER RECESS NUT

THIS NUT IS TO BE USED AS AN ALTERNATE TO SPLICE TUBULAR W-BEAM RAIL ELEMENTS (NO WASHER REQUIRED)



STEEL WASHER

REV. 5-1-85: REDREW SHEET AND CHANGED GUARDRAIL MOUNTED DELINEATOR TO FLEXIBLE DELINEATOR.

REV. 11-14-85: CHANGED ⅝″ BOLT AND NUT DETAILS.

REV. 9-1-86: ADDED TO DELINEATOR NOTE.

REV. 11-4-87: ADDED ⅝″ RECESS NUT TO DRAWING.

REV. 10-26-91: REDREW AND REORGANIZED SHEET. UPDATED DRAWING TO 1991 STANDARDS.

◘ REV. 1-19-92: MODIFIED CODING SYSTEM ON GENERAL NOTES AND SPECIFICATIONS.

REV. 7-29-98: CHANGED FLEXIBLE DELINEATOR INSTALLATION DETAIL.

REV. 9-5-98: CHANGED CARRIAGE AND BUTTON HEAD BOLT NOTES. DELETED DETAIL FOR SQUARE WASHER FOR BUTTON HEAD BOLTS.

REV. 6-6-11: REORGANIZED SHEET AND ADDED GENERAL NOTE H.

◘ REV. 4-17-12: CORRECTED ERROR IN NOTE Ⓕ.

FLEXIBLE DELINEATOR GENERAL NOTES

Ⓐ DELINEATORS SHALL CONFORM TO NOTES AND DETAILS SPECIFIED ON STANDARD DRAWING T-S-11,

Ⓑ DELINEATORS SHALL BE INSTALLED ACROSS BRIDGES ONLY WHEN GUARDRAIL IS CONTINUOUS ACROSS BRIDGES. SPACING ON BRIDGES SHALL BE AT 12′-6″ INTERVALS.

Ⓒ THE COLOR OF DELINEATORS SHALL CONFORM TO THE COLOR OF EDGELINES STIPULATED IN SECTION 3B-6 OF THE MUTCD (CURRENT EDITION).

Ⓓ DELINEATORS SHALL BE FACED TOWARD THE APPROACHING TRAFFIC IN LANE ADJACENT TO THE GUARDRAIL AT ALL LOCATIONS.

Ⓔ THE GUARDRAIL DELINEATORS WILL BE SECURED TO THE WOOD POST BY TWO (2) 16 PENNY NAILS AND TO THE STEEL POST BY TWO (2) 2-PIECE CHERRY MATE RIVETS (MODEL: BALM-8-BP12) OR EQUIVALENT. A ⅜″ GALVANIZED FLANGED NUT WILL BE PLACED BETWEEN THE DELINEATOR AND THE POST ON EACH OR RIVET.

Ⓕ THE TWO HOLES IN THE STEEL GUARDRAIL POSTS USED TO ATTACH THE DELINEATOR SHALL BE ¼″ IN DIAMETER AND SHALL BE SHOP DRILLED OR BE DRILLED IN THE FIELD. IF THE HOLES ARE SHOP DRILLED IT SHALL BE DONE PRIOR TO GALVANIZING THE POST. IF THE HOLES ARE FIELD DRILLED THEY SHALL BE THOROUGHLY PAINTED WITH A TOUCH-UP GALVANIZING SPRAY PAINT PRIOR TO ATTACHING THE DELINEATOR POST.

Ⓖ THE COST OF FURNISHING AND INSTALLING THESE BRIDGE APPROACH GUARDRAIL DELINEATORS SHALL BE INCLUDED IN THE PRICE BID FOR THE ITEMS OF GUARDRAIL TO WHICH THE DELINEATORS ARE ATTACHED.

Ⓗ ONLY DELINEATORS LISTED ON THE QPL, LIST 1. SECTION G.2 GUARDRAIL POST DELINEATION, MAY BE USED.

SPECIFICATIONS

Ⓢ1 BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS TO THE REQUIREMENTS OF ASTM A563M, GRADE "A" OR BETTER, AND BE GALVANIZED IN ACCORDANCE WITH ASTM A153.

Ⓢ2 DIMENSIONAL TOLERANCES NOT SHOWN OR IMPLIED ARE INTENDED TO BE THOSE CONSISTENT WITH THE PROPER FUNCTIONING OF THE PART, INCLUDING ITS APPEARANCE, AND ACCEPTED MANUFACTURING PRACTICES.

CARRIAGE BOLTS

L	THREAD LENGTH	INTENDED USE
1½″	FULL LENGTH THREAD	THIS BOLT IS A SPLICE BOLT FOR THE CHANNEL RUB RAIL ELEMENTS.
3″	1½″ MINIMUM THREAD LENGTH	THIS BOLT IS FOR FASTENING CHANNEL RUB RAIL ELEMENTS TO STEEL POST.
11″	1¾″ MINIMUM THREAD LENGTH	THIS BOLT IS FOR FASTENING CHANNEL RUB RAIL ELEMENTS TO WOOD POST.
14″	1¾″ MINIMUM THREAD LENGTH	THIS BOLT IS FOR FASTENING RUB RAIL ELEMENTS TO WOOD POST WHEN USED FOR MEDIAN DIVIDERS.

BUTTON HEAD BOLTS

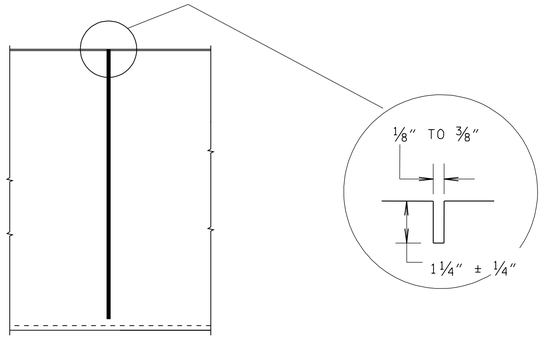
L	THREAD LENGTH	INTENDED USE
1¼″	FULL LENGTH THREAD	THIS BOLT IS FOR FASTENING "W" BEAM RAIL ELEMENTS AT JOINTS.
9½″	1¾″ MINIMUM THREAD LENGTH	THIS BOLT IS FOR FASTENING "W" BEAM RAIL ELEMENTS TO METAL POST WITH WOOD BLOCK-OUTS.
18″	2½″ MINIMUM THREAD LENGTH	THIS BOLT IS FOR FASTENING "W" BEAM RAIL ELEMENTS TO WOOD POST WITH WOOD BLOCK-OUTS.
25″	2″ MINIMUM THREAD LENGTH	THIS BOLT IS FOR FASTENING "W" BEAM RAIL ELEMENTS TO WOOD POST WITH WOOD BLOCK-OUTS WHEN USED FOR MEDIAN DIVIDERS.

◘ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

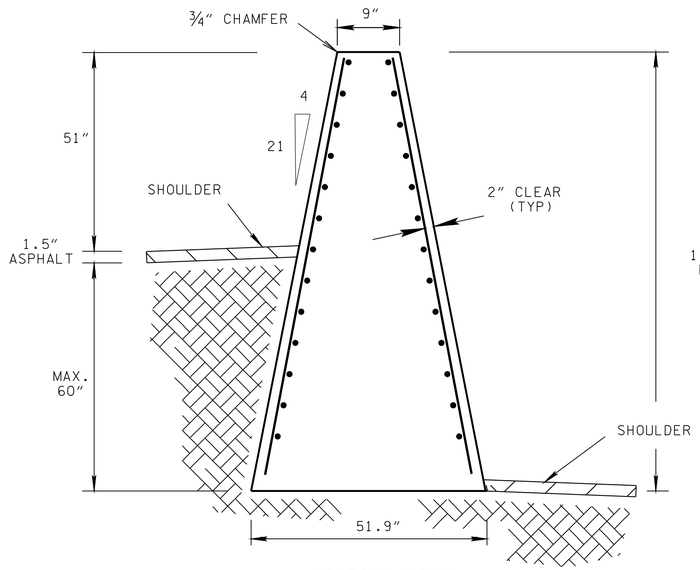
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

W-BEAM BARRIER FASTENING HARDWARE AND BRIDGE APPROACH DELINEATORS

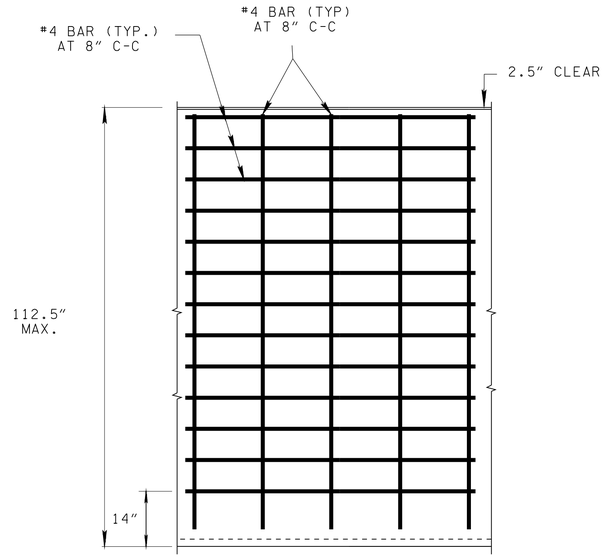
S-GR-14



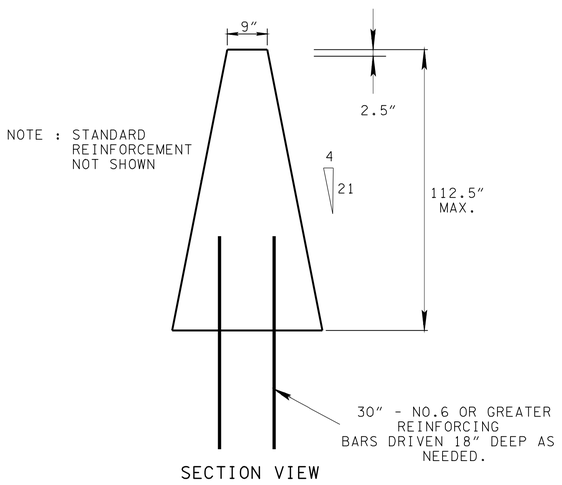
CONTRACTION JOINT DETAIL



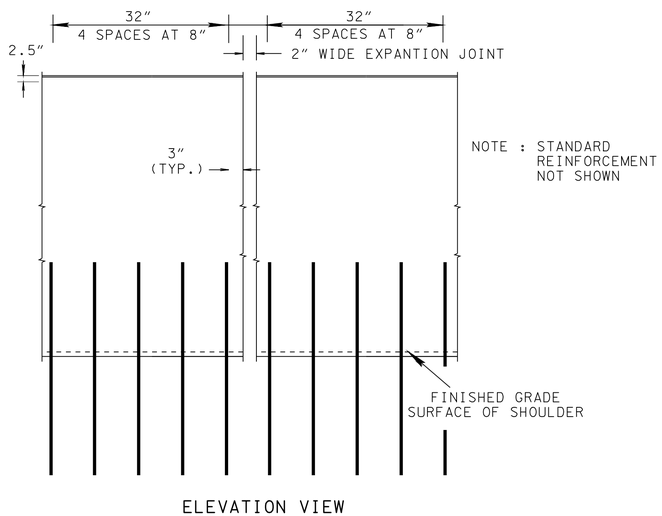
SECTION VIEW



ELEVATION VIEW

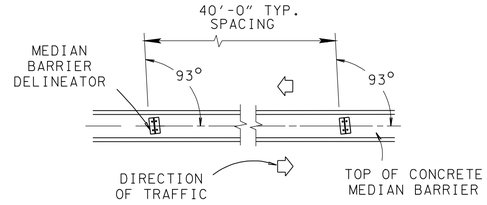


SECTION VIEW



ELEVATION VIEW

DETAILS OF ADDITIONAL REINFORCING AT THE WALL ENDS OR AT EXPANTION JOINT



MOUNTING DETAIL

DELINEATOR NOTES

1. MEDIAN BARRIER DELINEATOR REFLECTIVE SHEETING SHALL MEET ASTM D4956, TYPE V SPECIFICATIONS. DELINEATORS WITH DIMENSIONS OTHER THAN 4" X 3" MAY BE USED IF THE PRODUCT IS ON THE APPROVED PRODUCTS LIST. THE VARIATIONS IN DELINEATOR DIMENSION SHOULD NOT EXCEED ± 10%. DIFFERENT SIZE OR MANUFACTUREED MEDIAN BARRIER DELINEATORS SHOULD NOT BE MIXED IN THE SAME LINE.
2. MEDIAN BARRIER DELINEATORS SHALL BE HIGH IMPACT, UV-STABILIZED, ENGINEERED THERMOPLASTIC OR POLYCARBONATE SUBSTRATE. SEE TDOT APPROVED QUALIFIED PRODUCT LISTS FOR ACCEPTABLE PRODUCTS.
3. MEDIAN BARRIER DELINEATORS WILL NOT BE REQUIRED IN AREAS WHERE ROADWAY IS LIGHTED.
4. SINGLE WHITE REFLECTIVE SHEETING WILL BE SUBSTITUTED FOR THE DOUBLE YELLOW REFLECTIVE SHEETING WHEN TRAFFIC ON EACH SIDE OF THE BARRIER IS GOING IN THE SAME DIRECTION.
5. THE COST OF FURNISHING AND INSTALLING MEDIAN BARRIER DELINEATORS, INCLUDING ALL MATERIALS, LABOR, AND INCIDENTALS NECESSARY TO COMPLETE THE INSTALLATION, SHALL BE INCLUDED IN BID PRICE FOR CONCRETE MEDIAN BARRIER.
6. MEDIAN BARRIER DELINEATORS SHALL BE MOUNTED TO THE CONCRETE MEDIAN BARRIER WITH A ONE COMPONENT ADHESIVE AS RECOMMENDED BY THE MANUFACTURER. THEY SHALL BE INSTALLED NO EARLIER THAN THREE WEEKS AFTER THE TEXTURE COATING HAS BEEN APPLIED.

GENERAL NOTES

A. CONCRETE BARRIER WALL SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, SECTION 711 AND/OR CURRENT SPECIAL PROVISIONS.

B. IF SAWED CONTRACTION JOINTS ARE USED, THE JOINTS MUST BE SAWED WITHIN FOUR (4) HOURS AFTER THE CONCRETE IS PLACED.

C. THE CONTRACTION JOINTS ARE TO BE SPACED AT 20 TO 25 FOOT INTERVALS WHEN CONSTRUCTED ON ASPHALT PAVEMENT. WHEN THE CONCRETE BARRIER WALL IS ATTACHED TO CONCRETE PAVEMENT THE CONTRACTION JOINTS WILL CORRESPOND TO THE JOINTS IN THE CONCRETE PAVEMENT. THE COST OF MATERIAL AND LABOR FOR THE JOINT INSTALLATION SHALL BE INCLUDED IN THE BID PRICE FOR CONCRETE MEDIAN BARRIER.

D. THE CONCRETE BARRIER WALL SHALL BE GIVEN AN APPLIED TEXTURE FINISH. THE COLOR OF THE FINISH SHALL BE WHITE, FEDERAL SPECIFICATION NO. 37886. THE COST OF MATERIALS AND LABOR FOR THE TEXTURE FINISH SHALL BE INCLUDED IN THE BID PRICE FOR CONCRETE MEDIAN BARRIER.

E. THE TWO (2) INCH OPEN EXPANSION JOINTS SHALL BE PLACED AT A MAXIMUM SPACING NOT TO EXCEED 300 FEET. IF FIXED OBJECTS SUCH AS BRIDGE PIERS, BRIDGE ENDS, OVERHEAD SIGN SUPPORTS, OR OTHER FEATURES PROJECTING THROUGH, INTO OR AGAINST THE BARRIER EXIST THAT REQUIRE TWO INCH EXPANSION JOINTS, THEN THE DISTANCE BETWEEN THE EXPANSION JOINTS IS TO BE REDUCED IN ORDER TO ALLOW AN EQUAL DISTANCE BETWEEN JOINTS THAT IS LESS THAN 300 FEET. ALL ADDITIONAL STEEL REQUIRED AT EXPANSION JOINTS TO BE EPOXY COATED REINFORCING STEEL. THE COST OF MATERIAL AND LABOR FOR THE JOINT INSTALLATION SHALL BE INCLUDED IN THE BID PRICE FOR CONCRETE MEDIAN BARRIER.

F. CHAMFER TOP AND END EDGES 3/4 INCH.

G. BAR SPLICES FOR ROADWAY BARRIER SHALL BE A MINIMUM OF 24 TIMES THE NOMINAL DIAMETER OF THE BAR.

H. ANY METHOD DEVISED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER THAT WILL ASSURE THE LONGITUDINAL ROADWAY REINFORCING STEEL WILL BE FIXED AGAINST MOVEMENT AND POSITIONED ± 1/2 INCH AS DIMENSIONED WHEN TIED TO THE TRANSVERSE ROADWAY REINFORCING STEEL WILL BE SATISFACTORY.

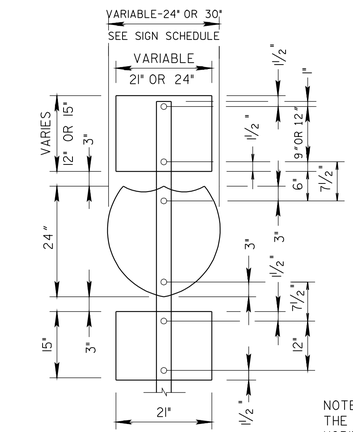
I. PAYMENT WILL BE MADE UNDER ITEM NO. 711-05.70, SINGLE SLOPE CONCRETE MEDIAN BARRIER WALL PER LINEAR FOOT.

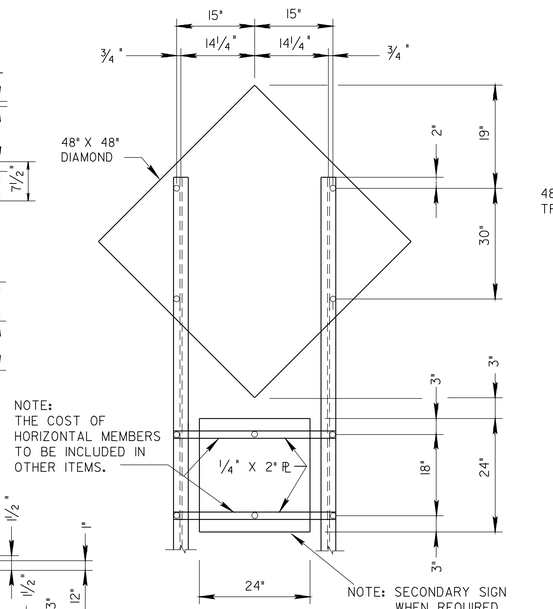
J. MIN. SAFETY PERFORMANCE OF 112.5" SINGLE SLOPE WALL IS ACCEPTABLE ACCORDING TO THE TL-3 EVALUATION CRITERIA SPECIFIED IN NCHRP REPORT 350 AS EVALUATED BY TTI REPORT 405160-33.

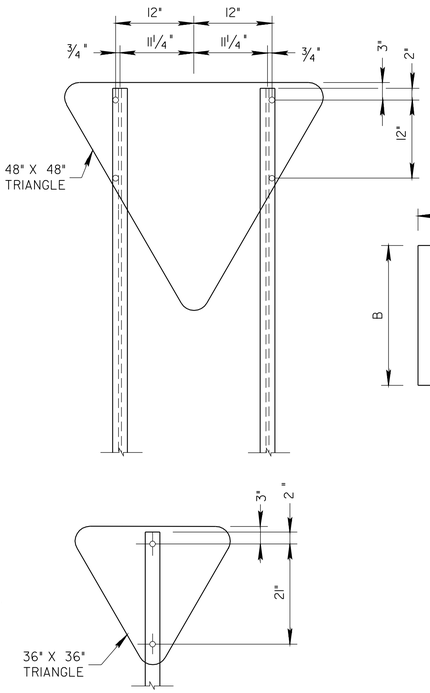
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

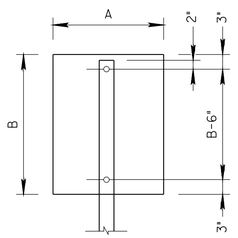
SINGLE SLOPE BARRIER WALL FOR GRADE SEPARATED MEDIAN

4-18-12 | S-SSMB-9

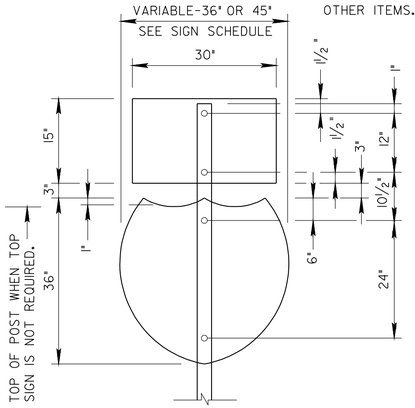


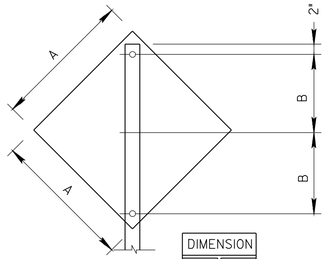




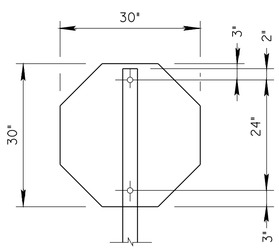


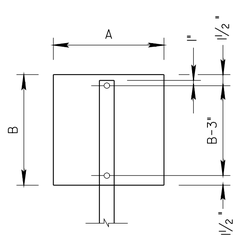
DIMENSION	
A	B
12"	36"
18"	18"
18"	24"
24"	24"
24"	30"
30"	30"
30"	36"
36"	30"



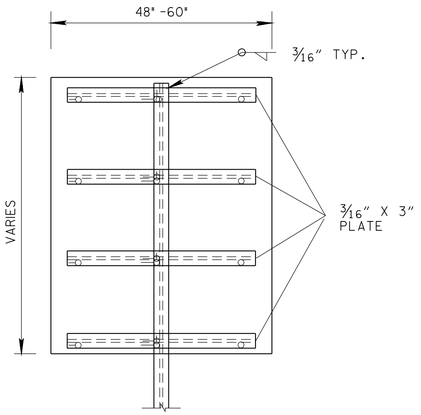


DIMENSION	
A	B
30"	15"
36"	18"



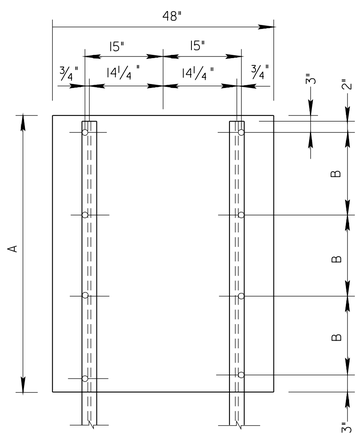


DIMENSION	
A	B
12"	18"
21"	9"
21"	15"
24"	12"
30"	15"
36"	12"

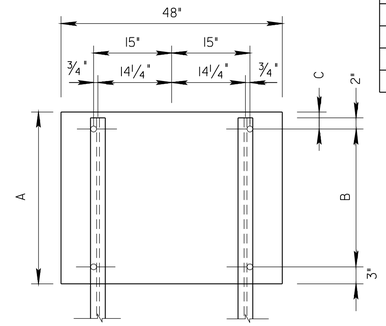


SIGN STIFFENER DETAIL

BACKSIDE OF SIGN
(SEE NOTES G4 AND G5 FOR DETAILS)

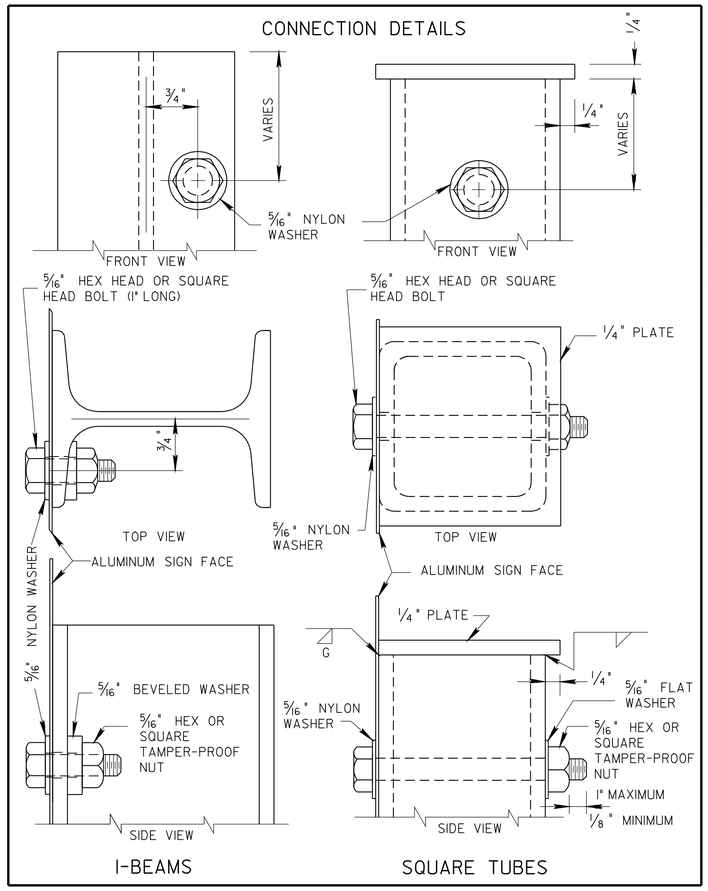


DIMENSION	
A	B
60"	18"
78"	24"
96"	22½"



DIMENSION		
A	B	C
24"	18"	3"
36"	24"	6"

CONNECTION DETAILS



STEEL MATERIAL NOTES

(S1) ALL STEEL SHALL BE GALVANIZED AFTER FABRICATION CONFORMING TO THE REQUIREMENTS OF ASTM A123 OR THE ELECTRO-GALVANIZED PROCESS. DAMAGE TO THE COATING SHALL BE REPAIRED SUBSEQUENT TO ERECTION.

(S2) MATERIAL FOR TUBES SHALL BE ASTM A500, GRADE B.

(S3) PLATES SHALL BE IN ACCORDANCE WITH ASTM A36 OR ASTM A242 STEEL.

(S4) BOLTS, NUTS AND WASHERS SHALL BE MADE OF MATERIAL CONFORMING TO ASTM A307.

(S5) HARDWARE SHALL BE GALAVANIZED CONFORMING TO ASTM A153 OR FEDERAL SPECIFICATION QQ-Z-325-B, TYPE I, CLASS 3 OR CADMIUM PLATED TO CONFORM TO ASTM A-165 OR FEDERAL SPECIFICATION QQ-P-416, TYPE III, CLASS 3.

ALUMINUM MATERIAL NOTES

(A1) MATERIAL FOR TUBES SHALL BE ASTM B-221, ALLOY 6061-T6.

(A2) FLAT SHEETS AND PLATES SHALL BE IN ACCORDANCE WITH ASTM B-209, ALLOY 6061-T6 OR 5052-H38.

(A3) BOLTS SHALL BE MADE FROM MATERIAL CONFORMING TO ASTM B-211, ALLOY 2024-T4.

(A4) MATERIAL FOR NUTS TO BE ASTM B-211, ALLOY 6262-T9.

(A5) MATERIAL FOR WASHERS TO BE ASTM B-209, ALLOY ALCLAD 2024-T4.

(A6) MATERIAL FOR WELD FILLER WIRE TO BE ASTM B-285, ALLOY ER 5356, ER 5556 OR ER 5183.

(A7) ALL BOLTS AND NUTS SHALL HAVE AN ANODIC COATING OF 0.0002 INCH MINIMUM THICKNESS WITH DICHROMATE OR BOILING WATER SEAL.

GENERAL NOTES

(G1) ALL HOLES SHALL BE ⅜" IN DIAMETER.

(G2) WELDING SHALL BE DONE IN ACCORDANCE WITH ASSHTO STANDARD SPECIFICATIONA FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES AND TRAFFIC SIGNALS (CURRENT EDITION.)

(G3) ALL BOLTS AND NUTS SHALL BE COATED WITH A SUITABLE LUBRICANT. STAINLESS STEEL BOLTS, NUT AND WASHERS MAY BE SUBSTITUTED.

(G4) IF A RECTANGULAR SIGN WIDER THAN 48" MUST BE MOUNTED ON A SIGNAL POST, 3/16" X 3" STEEL PLATE SIGN STIFFENERS ARE REQUIRED. THE COST OF STIFFENERS SHALL BE INCLUDED IN THE COST OF THE SIGN.

(G5) STIFFENERS ARE TO BE PLACED AT A MAXIMUM SPACING OF 1'-0", NO FURTHER THAN 9" FROM THE TOP AND BOTTOM OF THE SIGN AND THE STIFFENERS SHALL EXTEND TO WITHIN 3" FROM THE LEFT AND RIGHT EDGE OF THE SIGN.

REV. 6-11-71: NOTE ADDED TO GENERAL NOTES.

REV. 7-1-72: CHANGED DEPARTMENT NAME.

REV. 1-1-76: CHANGED DRAWING NO. FROM RD-S-12 TO T-S-12.

REV. 7-29-76: GENERAL REVISIONS.

REV. 4-12-77: ALUMINUM FLAT SHEETS AND PLATES.

REV. 10-24-79: LOCKNUTS REQUIRED.

REV. 12-12-83: CHANGED ROUND HEAD MACHINED SCREW TO HEX HEAD BOLT AND CORRECTED ALL DIMENSIONS AS NEEDED.

REV. 12-7-90: REDREW AND REORGANIZED SHEET. CHANGED SHEET NO. FROM T-S-12 TO T-S-10.

☐ REV. 5-27-03: CORRECTED GENERAL NOTE (62).

☐ REV. 2-21-12: ADDED GENERAL NOTES (64) AND (65).

☐ REV. 4-4-12: ADDED SIGN STIFFENER DETAIL.

☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

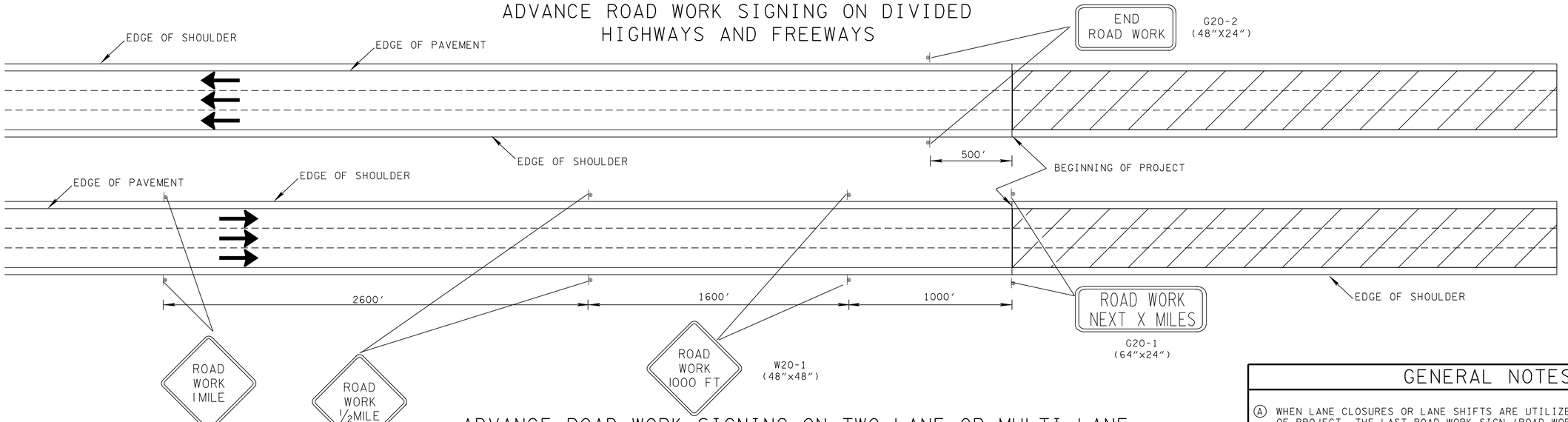
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

STANDARD MOUNTING DETAILS FLAT SHEET SIGNS ALUMINUM-STEEL DESIGN

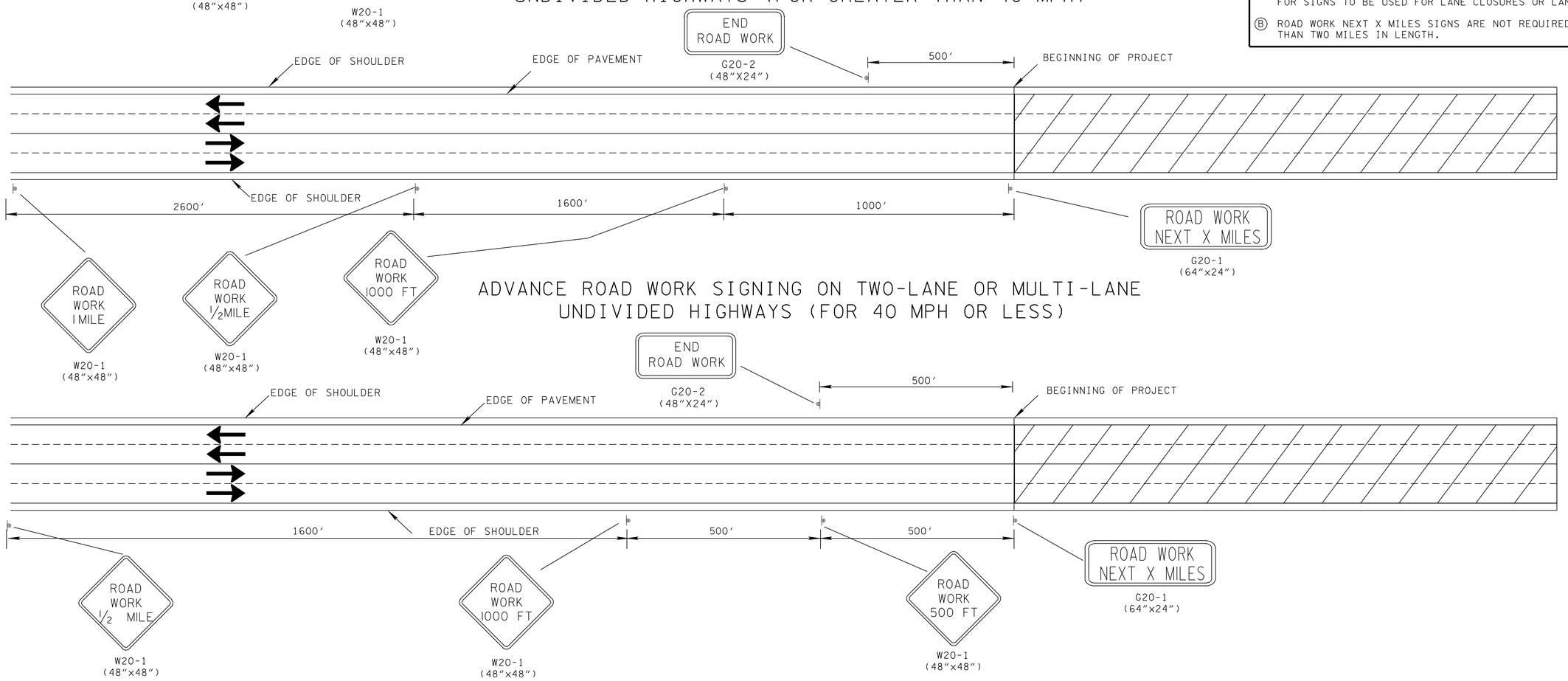
T-S-10

- REV. 12-18-99: DELETED OLD GENERAL NOTE Ⓐ AND MODIFIED LAST GENERAL NOTE.
- REV.1-19-01: REMOVED "BEE ALERT ARRIVE UNHURT" SIGN CURRENTLY IN ADVANCE OF OTHER WARNING SIGNS.
- REV. 4-2-12: CHANGED SIGN G20-2A TO G20-2.

ADVANCE ROAD WORK SIGNING ON DIVIDED HIGHWAYS AND FREEWAYS



ADVANCE ROAD WORK SIGNING ON TWO-LANE OR MULTI-LANE UNDIVIDED HIGHWAYS (FOR GREATER THAN 40 MPH)



ADVANCE ROAD WORK SIGNING ON TWO-LANE OR MULTI-LANE UNDIVIDED HIGHWAYS (FOR 40 MPH OR LESS)

GENERAL NOTES

Ⓐ WHEN LANE CLOSURES OR LANE SHIFTS ARE UTILIZED AT THE BEGINNING OF PROJECT, THE LAST ROAD WORK SIGN (ROAD WORK 1000 FT. OR ROAD WORK 500 FT.) SHALL BE REMOVED OR COVERED TO ELIMINATE SIGN CLUTTER. SEE STANDARD DRAWING NOS. T-WZ-11 THRU T-WZ-19 FOR SIGNS TO BE USED FOR LANE CLOSURES OR LANE SHIFTS.

Ⓑ ROAD WORK NEXT X MILES SIGNS ARE NOT REQUIRED FOR ROAD WORK LESS THAN TWO MILES IN LENGTH.

- MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

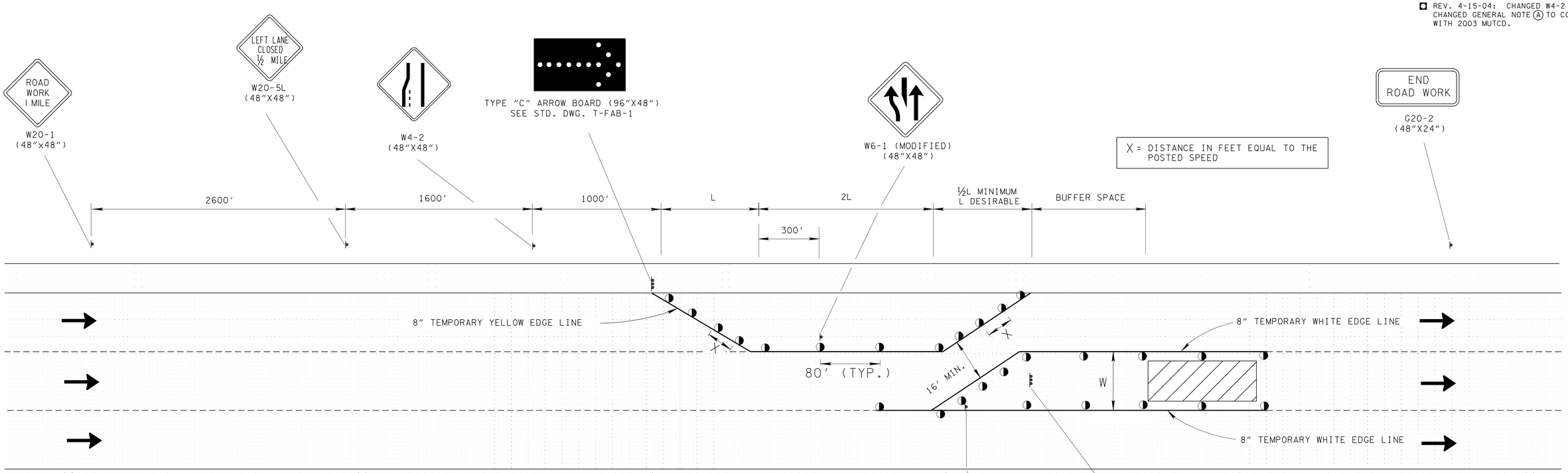
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

ADVANCE ROAD WORK SIGNING ON HIGHWAYS AND FREEWAYS

5-27-98 | T-WZ-10

- REV. 9-1-05: REMOVED TYPE "C" WARNING LIGHTS FROM FLEXIBLE DRUMS IN TAPER.
- REV. 03-13-09: MODIFIED FLEXIBLE DRUM SPACING.
- REV. 4-2-12: CHANGED SIGN G20-2A TO G20-2.
- REV. 2-28-98: ADDED CHANNELIZATION DEVICE LEGEND. CHANGED LEGEND FOR FLEXIBLE DRUMS. MODIFIED HEADING AND SHEET NAME.
- REV. 5-27-98: CHANGED DRAWING NO. T-WZ-10 TO T-WZ-15. ADDED GENERAL NOTES.
- REV. 4-15-04: CHANGED W4-2 SIGN. CHANGED GENERAL NOTE (A) TO COMPLY WITH 2003 MUTCD.

TRAFFIC CONTROL FOR INTERIOR LANE CLOSURE ON FREEWAYS OR EXPRESSWAYS



COMPUTATION FOR DISTANCE L

L = W X S

L = TAPER LENGTH IN FEET.
W = WIDTH OF OFFSET IN FEET.
S = POSTED SPEED

GENERAL NOTES

(A) SEE TABLE 6C-2 OF PART VI OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR RECOMMENDED LENGTHS OF BUFFER SPACE WHICH ARE BASED ON STOPPING SIGHT DISTANCE AS A FUNCTION OF SPEED.

(B) SEE STANDARD DRAWING NO. T-WZ-10 FOR OTHER NEEDED ADVANCE SIGNING.

CHANNELIZATION DEVICE LEGEND

- FLEXIBLE DRUMS
- SIGN SUPPORT
- DIRECTION OF TRAFFIC
- WORK SITE
- FLASHING YELLOW ARROW BOARD (SEE STD. DWG. NO. T-FAB-1,FOR DETAILS AND SPECIFICATIONS)

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

INTERIOR LANE CLOSURE ON FREEWAYS OR EXPRESSWAYS

12-18-94 | T-WZ-15

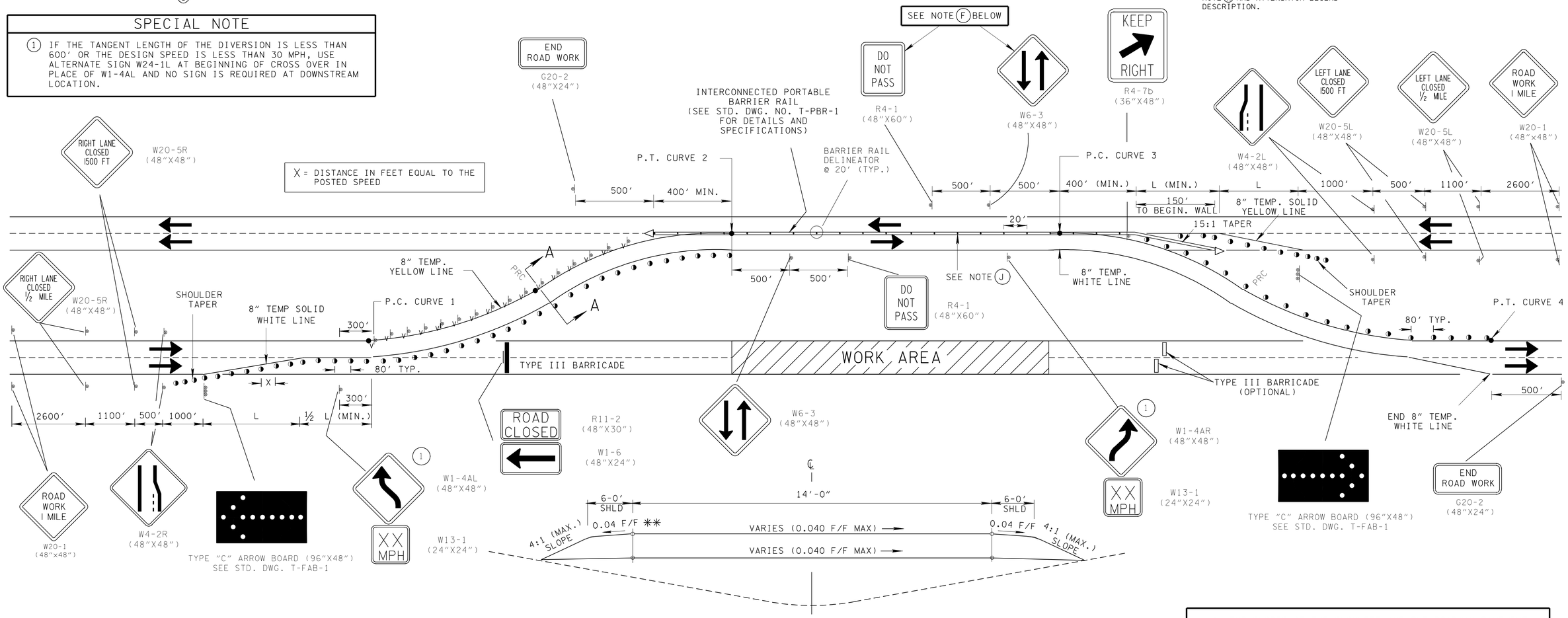
- REV. 4-2-12: ADDED NOTE (1) AND SIGN W24-1.
- REV. 5-12-06: REPLACED VERTICAL PANEL WITH BARRIER RAIL DELINEATORS. ADDED GENERAL NOTES (I) & (J).
- REV. 10-06-06: CHANGED ITEM NO. FOR BARRIER RAIL DELINEATOR. ADDED GENERAL NOTE (K). DELETED GENERAL NOTE (J).
- REV. 03-13-09: CHANGED GENERAL NOTE (H) AND ATTENUATOR LEGEND DESCRIPTION.
- REV. 5-27-01: CHANGED PAY ITEMS GENERAL NOTE (C).
- REV. 7-29-03: CHANGED GENERAL NOTE (H).
- REV. 9-1-05: REMOVED TYPE "C" WARNING LIGHTS FROM FLEXIBLE DRUMS IN TAPER.

MEDIAN CROSS-OVER DETAIL ON DIVIDED HIGHWAYS

ALT. W24-1L (48"X48")

SPECIAL NOTE

(1) IF THE TANGENT LENGTH OF THE DIVERSION IS LESS THAN 600' OR THE DESIGN SPEED IS LESS THAN 30 MPH, USE ALTERNATE SIGN W24-1L AT BEGINNING OF CROSS OVER IN PLACE OF W1-4AL AND NO SIGN IS REQUIRED AT DOWNSTREAM LOCATION.



SECTION A-A

TYPICAL SECTION OF TEMPORARY MEDIAN CROSS-OVER

** THE SLOPES OF THE SHOULDER AND THE ROADWAY PAVEMENT SHALL NOT EXCEED AN ALGEBRAIC DIFFERENCE OF 0.07 FOOT PER FOOT.

GENERAL NOTES

(A) CROSS-OVERS SHALL BE DESIGNED FOR SPEEDS NOT LESS THAN 10 MILES PER HOUR BELOW THE POSTED SPEED. THE GEOMETRY DETAIL FOR CROSS-OVER SHOWN ON STANDARD DRAWING T-WZ-20 IS FOR A TANGENT DIVIDED HIGHWAY SECTION ONLY. THE DESIGNER SHALL PROVIDE GEOMETRIC DETAILS OF CROSS-OVER(S) ON CURVED DIVIDED HIGHWAY SECTIONS.

(B) ADVISORY SPEED PLATES ON REVERSE CURVE SIGNS (W1-4) SHALL BE 10 MILES PER HOUR LESS THAN THE DESIGN SPEED OF THE CROSS-OVER.

(C) TEMPORARY CROSSDRAINS SHALL BE PROVIDED WHERE CROSS-OVER CROSSES THE LOW POINT OF THE DEPRESSED MEDIAN. THE DESIGNER WILL PROVIDE THE LENGTH AND SIZE OF THESE CROSSDRAINS ON THE PLANS. THESE CROSSDRAINS SHALL BE PAID FOR UNDER ITEM NOS. 621-03.02 THROUGH 621-03.10.

(D) PAVEMENT SECTION OF TEMPORARY MEDIAN CROSS-OVER IS SHOWN ON TYPICAL SECTION SHEETS OF PLANS.

(E) SEE STANDARD DRAWING T-WZ-10 FOR OTHER NEEDED ADVANCE SIGNING.

(F) TWO-WAY TRAFFIC SYMBOL SIGN (W6-3) AND DO NOT PASS SIGN (R4-1) TO BE PLACED AT ½ MILE INTERVALS ON TWO-WAY TEMPORARY TRAFFIC SECTION.

(G) A SECOND ARROW BOARD MAY BE USED WHEN GEOMETRIC CONDITIONS LIMITS THE VISIBILITY OF A LANE CLOSURE.

(H) TAPER LENGTH SHOWN FOR THE PORTABLE BARRIER RAIL IS A MINIMUM. PORTABLE BARRIER RAIL SHOULD BE EXTENDED BEYOND THE CLEAR ZONE OR BE SHIELDED WITH AN ATTENUATOR WHEN IT IS NOT FEASIBLE TO EXTEND THE PORTABLE BARRIER RAIL. SEE STANDARD DRAWING RD01-S-12 FOR CLEAR ZONE DISTANCE.

(I) BARRIER RAIL DELINEATORS (ITEM NO.712-04.50) SHALL BE USED ON PORTABLE BARRIER RAIL. REFER TO THE QUALIFIED PRODUCT LIST FOR APPROVED BARRIER RAIL DELINEATORS. DIFFERENT TYPES OF BARRIER RAIL DELINEATORS SHOULD NOT BE MIXED IN THE SAME LINE.

(J) RAISED PAVEMENT MARKERS SHOULD NOT BE USED ON RIGHT EDGE LINE.

COMPUTATION FOR DISTANCE L

L = W X S

L = TAPER LENGTH IN FEET
W = WIDTH OF OFFSET IN FEET
S = POSTED SPEED

CHANNELIZATION DEVICE LEGEND

- FLEXIBLE DRUMS
- VERTICAL PANELS
- SIGN SUPPORT
- DIRECTION OF TRAFFIC
- WORK SITE
- BARRIER RAIL DELINEATOR (ITEM NO. 712-04.50, PER EACH)
- FLASHING YELLOW ARROW BOARD (SEE STD. DWG. NO. T-FAB-1,FOR DETAILS AND SPECIFICATIONS)
- ATTENUATOR

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

MEDIAN CROSS-OVER DETAIL ON DIVIDED HIGHWAYS

10-26-98 T-WZ-19

DESCRIPTION
(1) SIGNAL HEAD ASSEMBLY (130 WITH BACKPLATE)
(2) SIGNAL CABLE - 5 CONDUCTOR
(A) (3) SIGNAL CABLE - 7 CONDUCTOR OR 12 CONDUCTOR
(4) SPAN WIRE ASSEMBLY (12,500 LB. MINIMUM BREAKING STRENGTH)
(5) TETHER WIRE ASSEMBLY - ¼" DIAMETER
(6) STEEL CONDUIT RISER ASSEMBLY
(7) DETECTOR AMPLIFIERS WITH CABINET
(B) (8) FOUR PHASE ACTUATED CONTROLLER WITH CABINET OR EIGHT PHASE ACTUATED CONTROLLER WITH CABINET
(9) SHIELDED DETECTOR CABLE
(10) WOOD POLE (SIGNAL SUPPORT) CL. 3, 35' LENGTH
(11) GUYING DEVICE (VERTICAL ANCHOR)
(12) MESSENGER CABLE - ¼" DIAMETER
(13) VEHICLE LOOP DETECTOR
(14) SAW SLOT
(15) LOOP WIRE

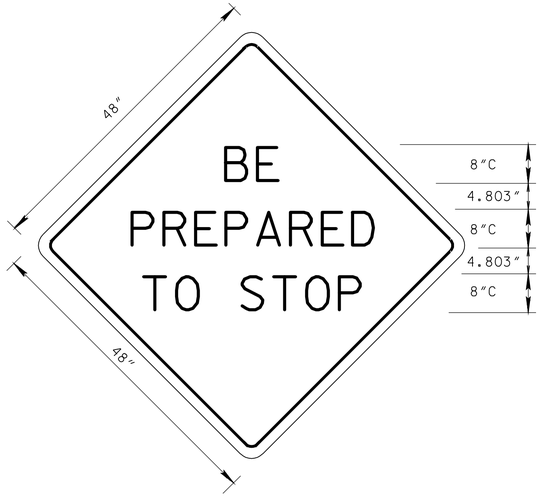
(A) FOR LONG CABLE RUNS (GREATER THAN 2500') WHERE VOLTAGE DROP IS EXCESSIVE, CONTRACTOR SHALL USE NO. 12 AWG CONDUCTORS.

(B) POLE MOUNTED

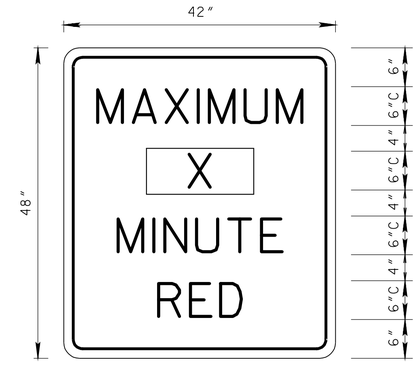
TRAFFIC CONTROL ITEMS (SIGNALS)

THE COST OF THE ABOVE ITEMS SHALL BE INCLUDED IN THE PRICE BID FOR ITEM NO. 730-40, TEMPORARY TRAFFIC SIGNAL SYSTEM (EACH).

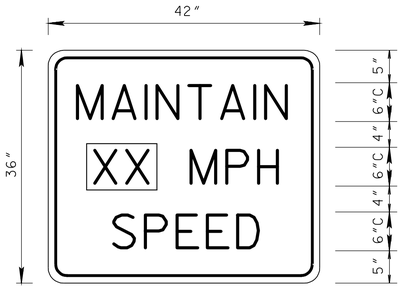
STANDARD SIGNS		
DESIGNATION	LEGEND	SIZE
W20-1	ROAD WORK ½ MILE	48" X 48"
W20-1	ROAD WORK 1500 FT.	48" X 48"
W20-1	ROAD WORK 500 FT.	48" X 48"
W20-1	ROAD WORK AHEAD	48" X 48"
W20-4	ONE LANE ROAD 1500 FT.	48" X 48"
W3-3	SIGNAL AHEAD (SYMBOL)	36" X 36"
W20-7	FLAGGER AHEAD (SYMBOL) WITH SUPPLEMENTAL PLATE	36" X 36" 24" X 18"
R10-6	STOP HERE ON RED	24" X 36"
R10-6 (MOD.)	STAY IN LANE TO EXT. GREEN	30" X 42"
R10-11A	NO TURN ON RED	24" X 30"
G20-2	END ROAD WORK	36" X 18"
W1-4aR	LANE SHIFT (SYMBOL)	30" X 30"



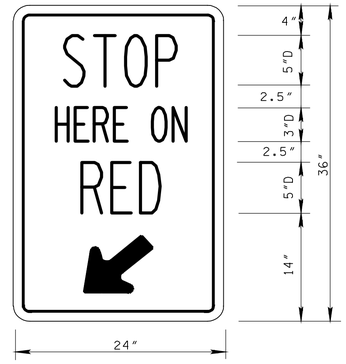
LEGEND
BLACK
BACKGROUND
ORANGE



LEGEND
BLACK
BACKGROUND
WHITE (REFLECTIVE)

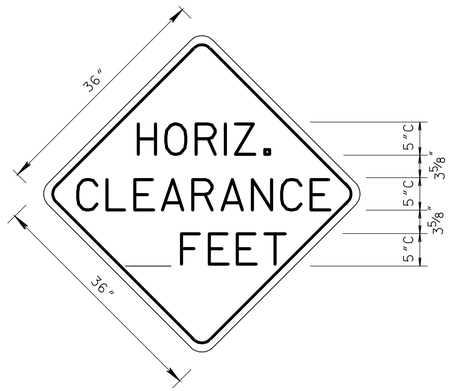


LEGEND
BLACK
BACKGROUND
WHITE (REFLECTIVE)

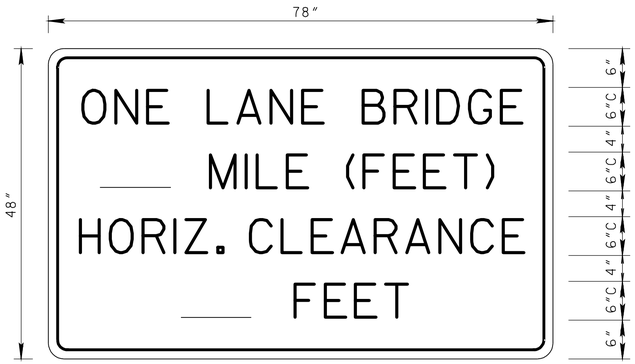


R10-6

LEGEND
BLACK
BACKGROUND
WHITE (REFLECTIVE)



LEGEND
BLACK
BACKGROUND
ORANGE

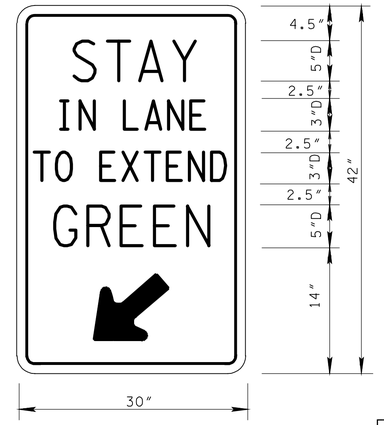


LEGEND
BLACK
BACKGROUND
ORANGE

DISTANCES AND LOCATIONS AS NOTED IN PLANS

SPECIAL SIGN DETAILS

SEE STANDARD DRAWING T-WZ-34 FOR SIGNING NOTES



R10-6 (MOD.)

LEGEND
BLACK
BACKGROUND
WHITE (REFLECTIVE)

REV. 9-17-82: DELETED ITEM NUMBERS AND NOTE REFERRING TO MEMO TO DESIGNERS.

REV. 3-22-85: CHANGED "FLAGMAN" TO "FLAGGER". REVISED SIGNAL ITEM DESCRIPTIONS.

REV. 10-24-86: REVISED TRAFFIC CONTROL ITEMS.

☒ REV. 1-19-92: REDREW AND REORGANIZED SHEET. MODIFIED DESCRIPTION BLOCK AND ADDED NEW SIGNS.

☒ REV. 5-16-94: CHANGED CONSTRUCTION SIGNS TO CONFORM TO REVISED PART VI, M.U.T.C.D., DATED 9-3-93.

☒ REV. 9-5-94: MODIFIED STANDARD SIGN TABLE TO REFLECT CHANGES MADE ON STANDARD DRAWING NO. T-CP-1.

☒ REV. 6-13-95: ADDED "ROAD WORK AHEAD" SIGN TO STANDARD SIGN TABLE.

☒ REV. 12-1-95: ADDED R10-6 (MOD.)

☒ REV. 5-27-98: CHANGED DRAWING NO. FROM T-CP-3 TO T-WZ-35.

☒ REV. 12-18-99: ADDED SIGN R10-6 TO SHEET.

■ REV. 7-29-03: IN STANDARD SIGNS BLOCK CHANGED SIZE OF END ROAD WORK CONSTRUCTION FROM 48" X 24" TO 36" X 18".

■ REV. 4-2-12: CHANGED TEXT SPACING AND SIZE ON BE PREPARED TO STOP SIGN, UPDATED SIGN W20-7A TO W20-7 AND G20-2A TO G20-2.

☒ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

CROSS REFERENCE DRAWINGS FOR THIS SHEET: T-WZ-32, T-WZ-33 AND T-WZ-34.

SHEET NOT TO SCALE

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL PLAN PAY ITEM AND SIGN DETAILS FOR TRAFFIC SIGNAL AT TWO LANE BRIDGE RECONSTRUCTION SITE

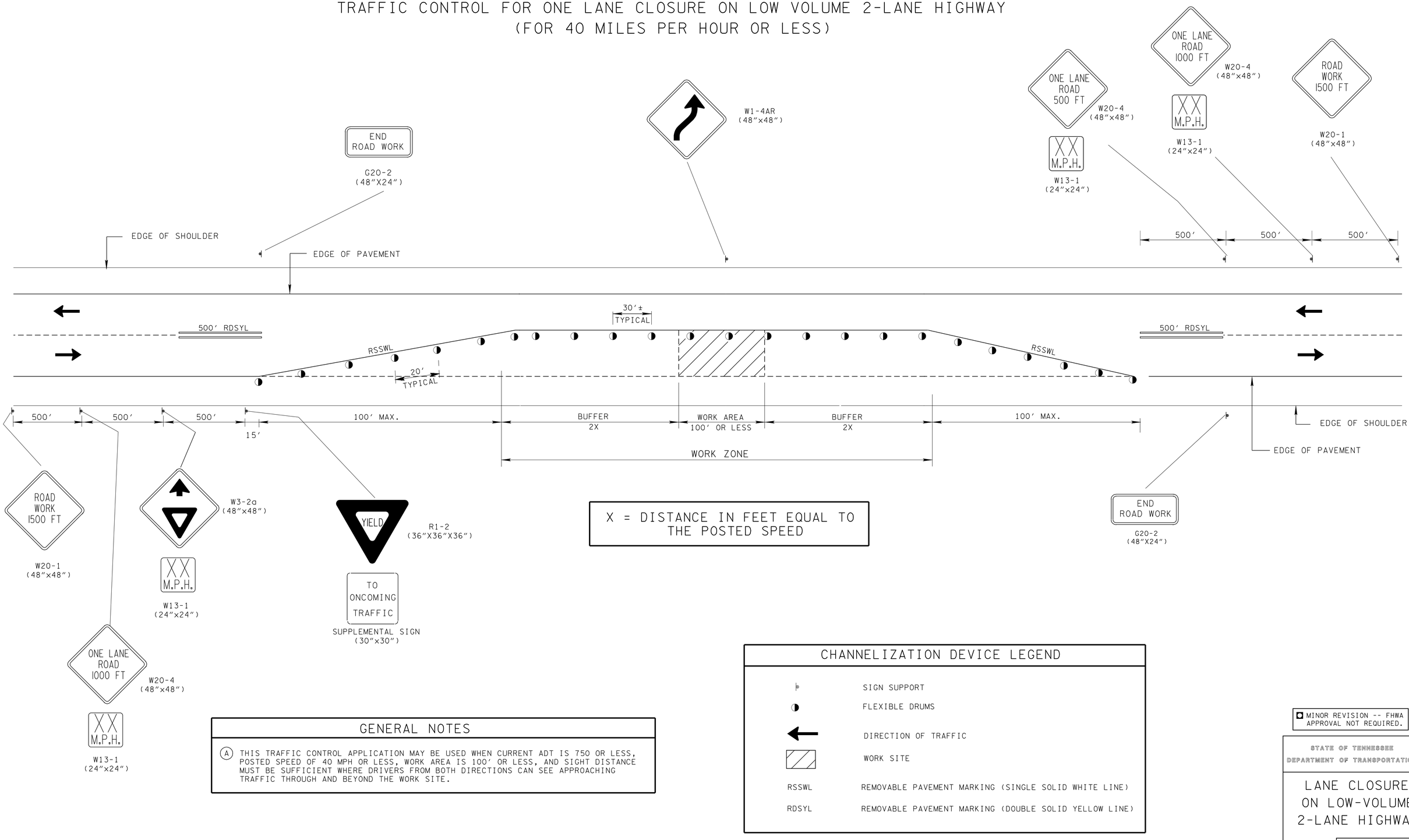
5-27-98 | T-WZ-35

- REV. 9-1-05: REMOVED TYPE "C" WARNING LIGHTS FROM FLEXIBLE DRUMS IN TAPER.
- REV. 4-2-12: ADDED 15' BETWEEN YIELD SIGN AND START OF TAPER, UPDATED G20-2A TO G20-2.
- REV. 4-15-99: MODIFIED CHANNELIZATION DEVICE LEGEND.

  REV. 12-18-99: ELIMINATED CONCRETE PORTABLE BARRIER WALL AND MODIFIED GENERAL NOTE Ⓐ.

  REV.1-19-00: DELETED GENERAL NOTE Ⓑ.

TRAFFIC CONTROL FOR ONE LANE CLOSURE ON LOW VOLUME 2-LANE HIGHWAY (FOR 40 MILES PER HOUR OR LESS)



X = DISTANCE IN FEET EQUAL TO THE POSTED SPEED

GENERAL NOTES

Ⓐ THIS TRAFFIC CONTROL APPLICATION MAY BE USED WHEN CURRENT ADT IS 750 OR LESS, POSTED SPEED OF 40 MPH OR LESS, WORK AREA IS 100' OR LESS, AND SIGHT DISTANCE MUST BE SUFFICIENT WHERE DRIVERS FROM BOTH DIRECTIONS CAN SEE APPROACHING TRAFFIC THROUGH AND BEYOND THE WORK SITE.

CHANNELIZATION DEVICE LEGEND

	SIGN SUPPORT
	FLEXIBLE DRUMS
	DIRECTION OF TRAFFIC
	WORK SITE
RSSWL	REMOVABLE PAVEMENT MARKING (SINGLE SOLID WHITE LINE)
RDSYL	REMOVABLE PAVEMENT MARKING (DOUBLE SOLID YELLOW LINE)

- MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

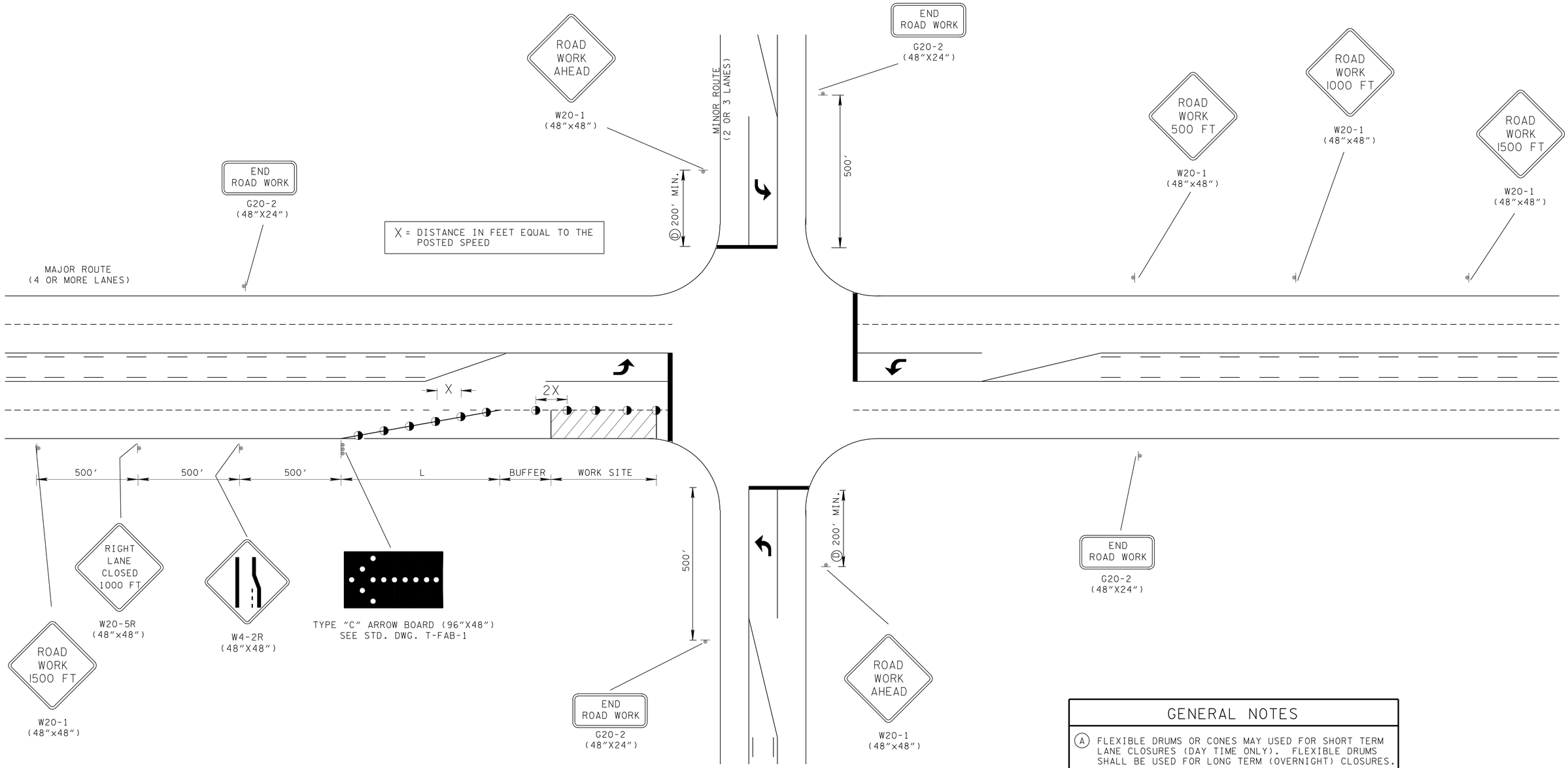
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

LANE CLOSURE ON LOW-VOLUME 2-LANE HIGHWAY

5-27-98 | T-WZ-36

- REV. 9-1-05: REMOVED TYPE "C" WARNING LIGHTS FROM FLEXIBLE DRUMS IN TAPER. REMOVED TYPE "C" WARNING LIGHT NOTE FROM GENERAL NOTES.
- REV. 4-2-12: CHANGED SIGN G20-2A TO G20-2.
- REV. 4-15-99: ADDED GENERAL NOTE (E).
- REV. 12-18-99: MODIFIED HEADING DESCRIPTION AND ELIMINATED OLD GENERAL NOTE (A).
- REV. 4-15-04: CHANGED W4-2 SIGN. CHANGED GENERAL NOTES (B) AND (C) TO COMPLY WITH 2003 MUTCD.

RIGHT LANE CLOSURES AT NEAR SIDE OF INTERSECTIONS



CHANNELIZATION DEVICE LEGEND

- FLEXIBLE DRUMS
- SIGN SUPPORT
- WORK SITE
- FLASHING YELLOW ARROW BOARD (SEE STD. DWG. NO. T-FAB-1,FOR DETAILS AND SPECIFICATIONS)

COMPUTATION FOR DISTANCE L

L = W X S (FOR POSTED SPEEDS OF 45 MPH OR GREATER)

$L = \frac{W X S^2}{60}$ (FOR POSTED SPEEDS OF 40 MPH OR LESS)

L = TAPER LENGTH IN FEET
W = WIDTH OF OFFSET IN FEET
S = POSTED SPEED

GENERAL NOTES

(A) FLEXIBLE DRUMS OR CONES MAY USED FOR SHORT TERM LANE CLOSURES (DAY TIME ONLY). FLEXIBLE DRUMS SHALL BE USED FOR LONG TERM (OVERNIGHT) CLOSURES.

(B) SEE TABLE 6C-2 OF PART VI OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR RECOMMENDED LENGTHS OF BUFFER SPACE WHICH ARE BASED ON STOPPING SIGHT DISTANCE AS A FUNCTION OF SPEED.

(C) SEE TABLE 6C-1 OF PART VI OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR GUIDELINES FOR ADVANCE WARNING SIGN SPACING TO BE USED TO DETERMINE DISTANCE FOR "ROAD WORK AHEAD" SIGN TO BE PLACED PRIOR TO INTERSECTION.

- MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

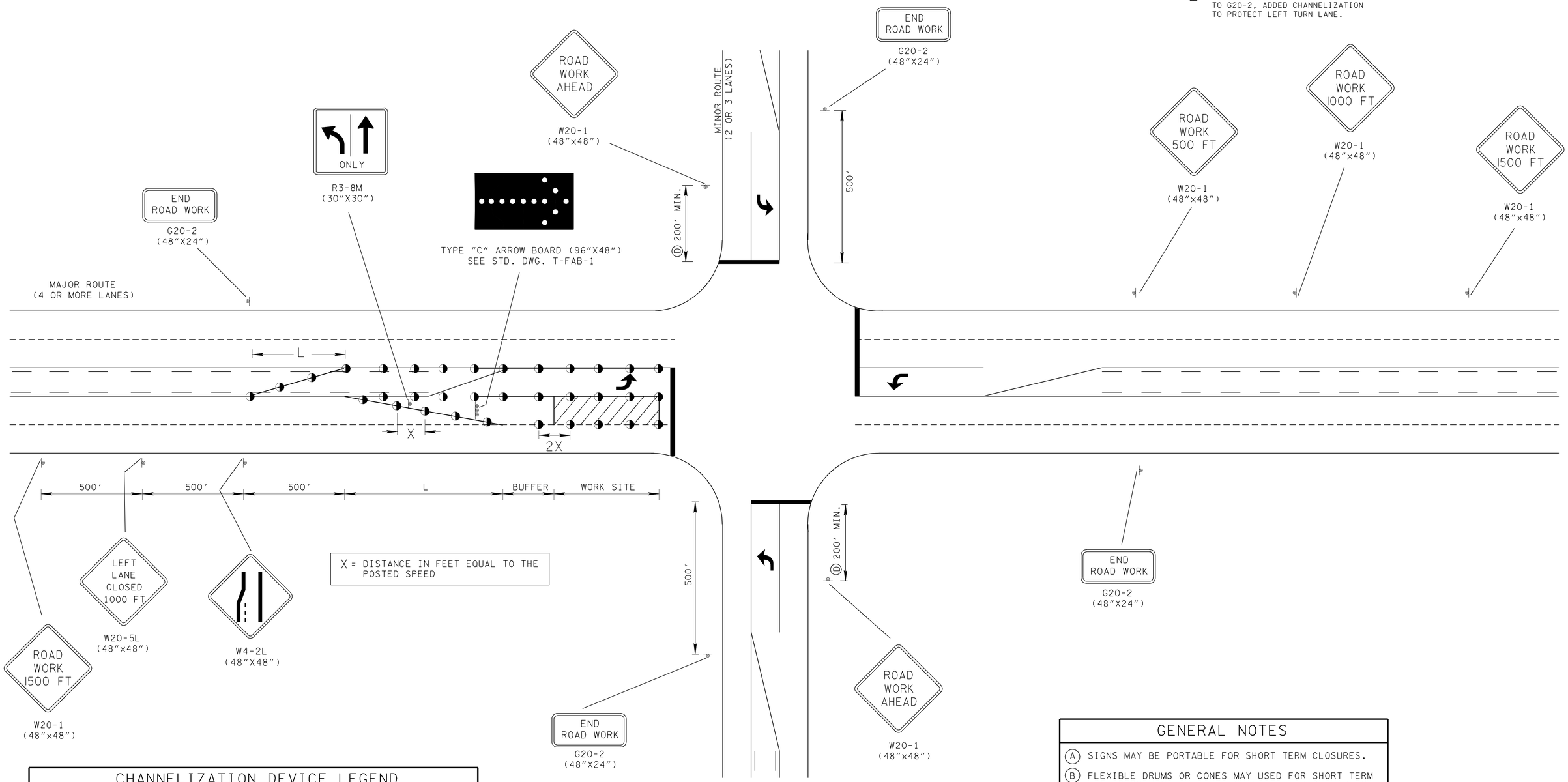
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RIGHT LANE CLOSURES AT NEAR SIDE OF INTERSECTIONS

5-27-98 | T-WZ-40

- REV. 9-1-05: REMOVED TYPE "C" WARNING LIGHTS FROM FLEXIBLE DRUMS IN TAPER. REMOVED TYPE "C" WARNING LIGHT NOTE FROM GENERAL NOTES.
- REV. 4-2-12: CHANGED G20-2A TO G20-2, ADDED CHANNELIZATION TO PROTECT LEFT TURN LANE.
- REV. 4-15-99: ADDED GENERAL NOTE (E).
- REV. 4-15-04: CHANGED W4-2 SIGN. CHANGED GENERAL NOTES (B) AND (C) TO COMPLY WITH 2003 MUTCD.

LEFT LANE CLOSURES AT NEAR SIDE OF INTERSECTIONS
(FOR 40 MILES PER HOUR AND GREATER)



CHANNELIZATION DEVICE LEGEND

- FLEXIBLE DRUMS
- SIGN SUPPORT
- WORK SITE
- FLASHING YELLOW ARROW BOARD (SEE STD. DWG. NO. T-FAB-1,FOR DETAILS AND SPECIFICATIONS)

COMPUTATION FOR DISTANCE L

$L = W \times S$ (FOR POSTED SPEEDS OF 45 MPH OR GREATER)

$L = \frac{W \times S^2}{60}$ (FOR POSTED SPEEDS OF 40 MPH OR LESS)

L = TAPER LENGTH IN FEET
W = WIDTH OF OFFSET IN FEET
S = POSTED SPEED

GENERAL NOTES

(A) SIGNS MAY BE PORTABLE FOR SHORT TERM CLOSURES.

(B) FLEXIBLE DRUMS OR CONES MAY USED FOR SHORT TERM LANE CLOSURES (DAY TIME ONLY). FLEXIBLE DRUMS SHALL BE USED FOR LONG TERM (OVERNIGHT) CLOSURES.

(C) SEE TABLE 6C-2 OF PART VI OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR RECOMMENDED LENGTHS OF BUFFER SPACE WHICH ARE BASED ON STOPPING SIGHT DISTANCE AS A FUNCTION OF SPEED.

(D) SEE TABLE 6C-1 OF PART VI OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR GUIDELINES FOR ADVANCE WARNING SIGN SPACING TO BE USED TO DETERMINE DISTANCE FOR "ROAD WORK AHEAD" SIGN TO BE PLACED PRIOR TO INTERSECTION.

- MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

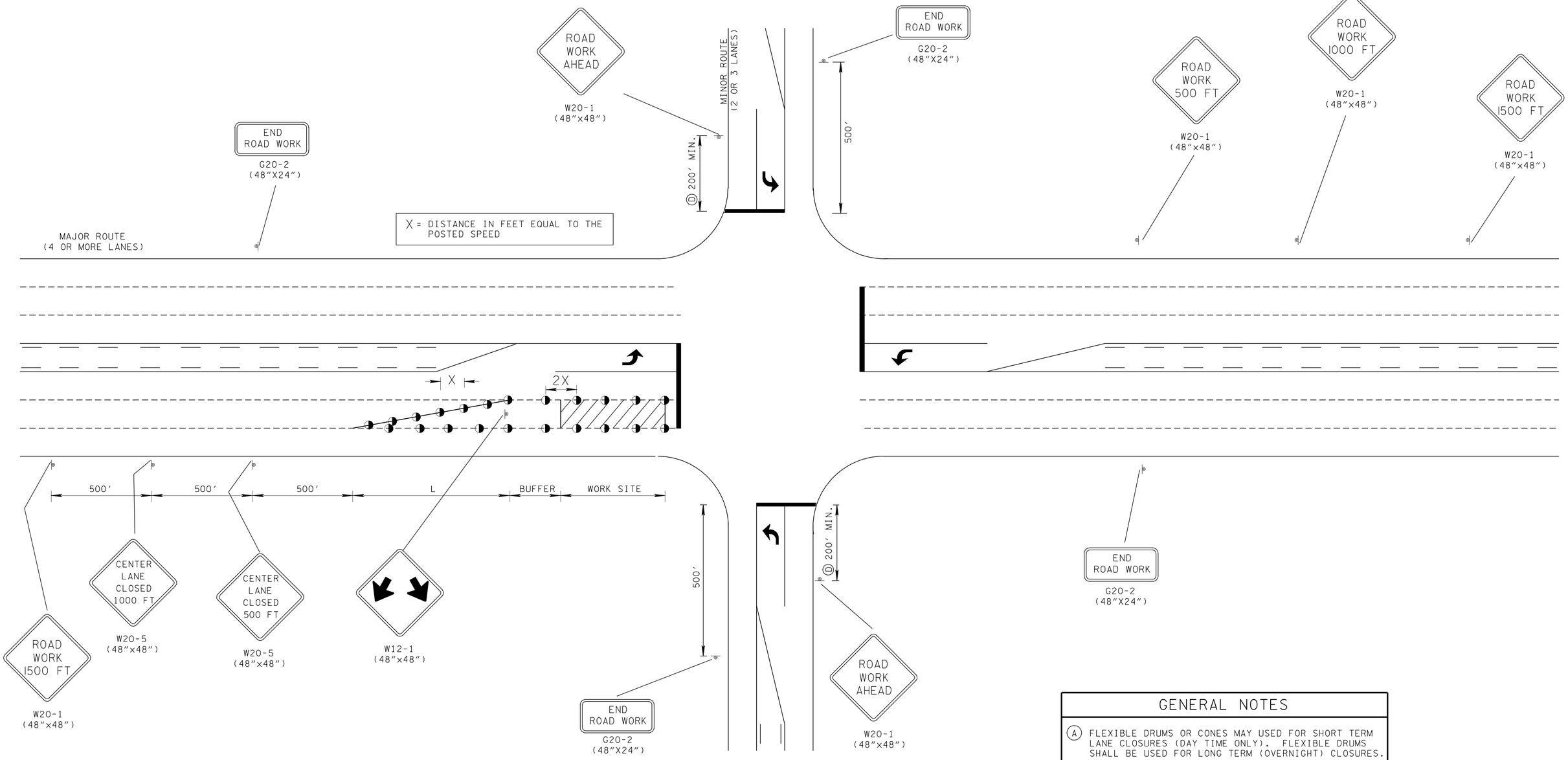
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

LEFT LANE CLOSURES AT NEAR SIDE OF INTERSECTIONS

5-27-98 | T-WZ-41

CENTER LANE CLOSURES AT NEAR SIDE OF INTERSECTIONS

- REV. 9-1-05: REMOVED TYPE "C" WARNING LIGHTS FROM FLEXIBLE DRUMS IN TAPER. REMOVED TYPE "C" WARNING LIGHT NOTE FROM GENERAL NOTES.
- REV. 4-2-12: MOVED SIGN W12-1, CHANGED SIGN G20-2A TO G20-2.
- REV. 4-15-99: ADDED GENERAL NOTE (E).
- REV. 12-18-99: MODIFIED HEADING DESCRIPTION AND ELIMINATED OLD GENERAL NOTE (A).
- REV. 4-15-04: CHANGED GENERAL NOTES (B) AND (C) TO COMPLY WITH 2003 MUTCD.



CHANNELIZATION DEVICE LEGEND

- FLEXIBLE DRUMS
- SIGN SUPPORT
- WORK SITE

COMPUTATION FOR DISTANCE L

L = W X S (FOR POSTED SPEEDS OF 45 MPH OR GREATER)

$L = \frac{W \times S^2}{60}$ (FOR POSTED SPEEDS OF 40 MPH OR LESS)

L = TAPER LENGTH IN FEET
W = WIDTH OF OFFSET IN FEET
S = POSTED SPEED

GENERAL NOTES

(A) FLEXIBLE DRUMS OR CONES MAY USED FOR SHORT TERM LANE CLOSURES (DAY TIME ONLY). FLEXIBLE DRUMS SHALL BE USED FOR LONG TERM (OVERNIGHT) CLOSURES.

(B) SEE TABLE 6C-2 OF PART VI OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR RECOMMENDED LENGTHS OF BUFFER SPACE WHICH ARE BASED ON STOPPING SIGHT DISTANCE AS A FUNCTION OF SPEED.

(C) SEE TABLE 6C-1 OF PART VI OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR GUIDELINES FOR ADVANCE WARNING SIGN SPACING TO BE USED TO DETERMINE DISTANCE FOR "ROAD WORK AHEAD" SIGN TO BE PLACED PRIOR TO INTERSECTION.

- MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

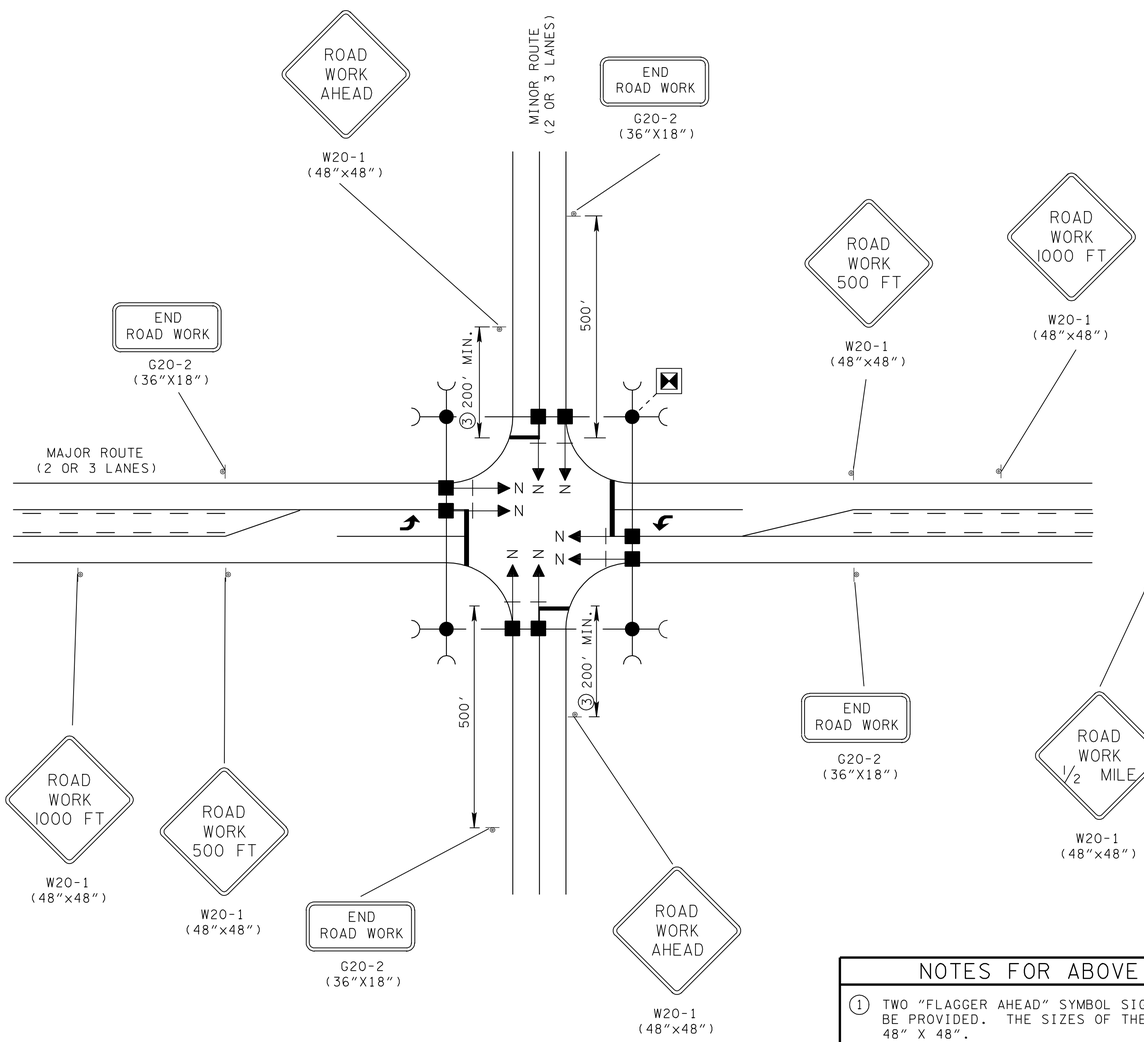
CENTER LANE CLOSURES AT NEAR SIDE OF INTERSECTIONS

5-27-98 | T-WZ-42

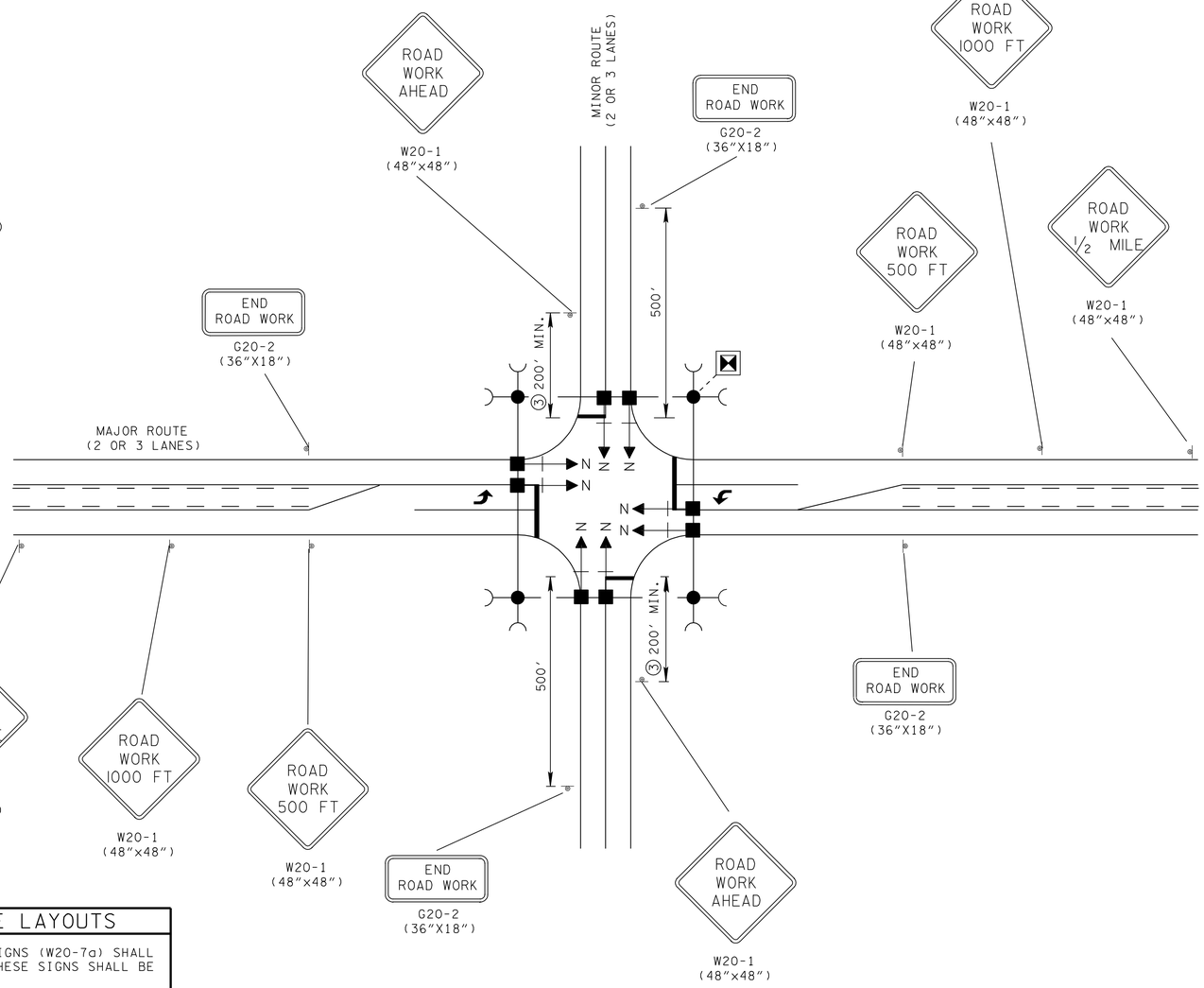
- REV. 4-2-12: CHANGED SIGN G20-2A TO G20-2.
- REV. 10-26-98: CHANGED CONSTRUCTION SIGN QUANTITIES.
- REV. 12-18-99: IN NOTES FOR ABOVE LAYOUT BLOCK DELETED OLD NOTE NO. (2).
- REV. 7-29-03: CHANGED SIZE OF END ROAD WORK CONSTRUCTION SIGN FROM 48"X24" TO 36"X18".

TRAFFIC CONTROL FOR SIGNAL ONLY PROJECTS WITH 2 OR 3 LANES ENTERING FROM ALL DIRECTIONS

DETAIL FOR 40 MPH DESIGN OR LESS



DETAIL FOR GREATER THAN 40 MPH DESIGN



NOTES FOR ABOVE LAYOUTS

(1) TWO "FLAGGER AHEAD" SYMBOL SIGNS (W20-7a) SHALL BE PROVIDED. THE SIZES OF THESE SIGNS SHALL BE 48" X 48".

(2) SEE TABLE VI-3 IN PART VI OF THE MUTCD (CURRENT EDITION).

CONSTRUCTION SIGN QUANTITIES
(ITEM NO. 712-06)

"T" INTERSECTIONS - 93.5 S.F.

4 - LEGGED INTERSECTIONS - 114 S.F.

LEGEND

- PAD MOUNTED CONTROLLER
- WOOD POLE FOR SIGNAL SUPPORT
- GUYING DEVICE ANGLE ANCHOR
- N — SIGNAL HEAD WITH NUMBER AND BACKPLATE

CONSTRUCTION SIGN QUANTITIES
(ITEM NO. 712-06)

"T" INTERSECTIONS - 125.5 S.F.

4 - LEGGED INTERSECTIONS - 146 S.F.

- MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL FOR SIGNALS ONLY PROJECTS ON 2 OR 3 LANE MAJOR ROUTES

7-27-98 | T-WZ-50

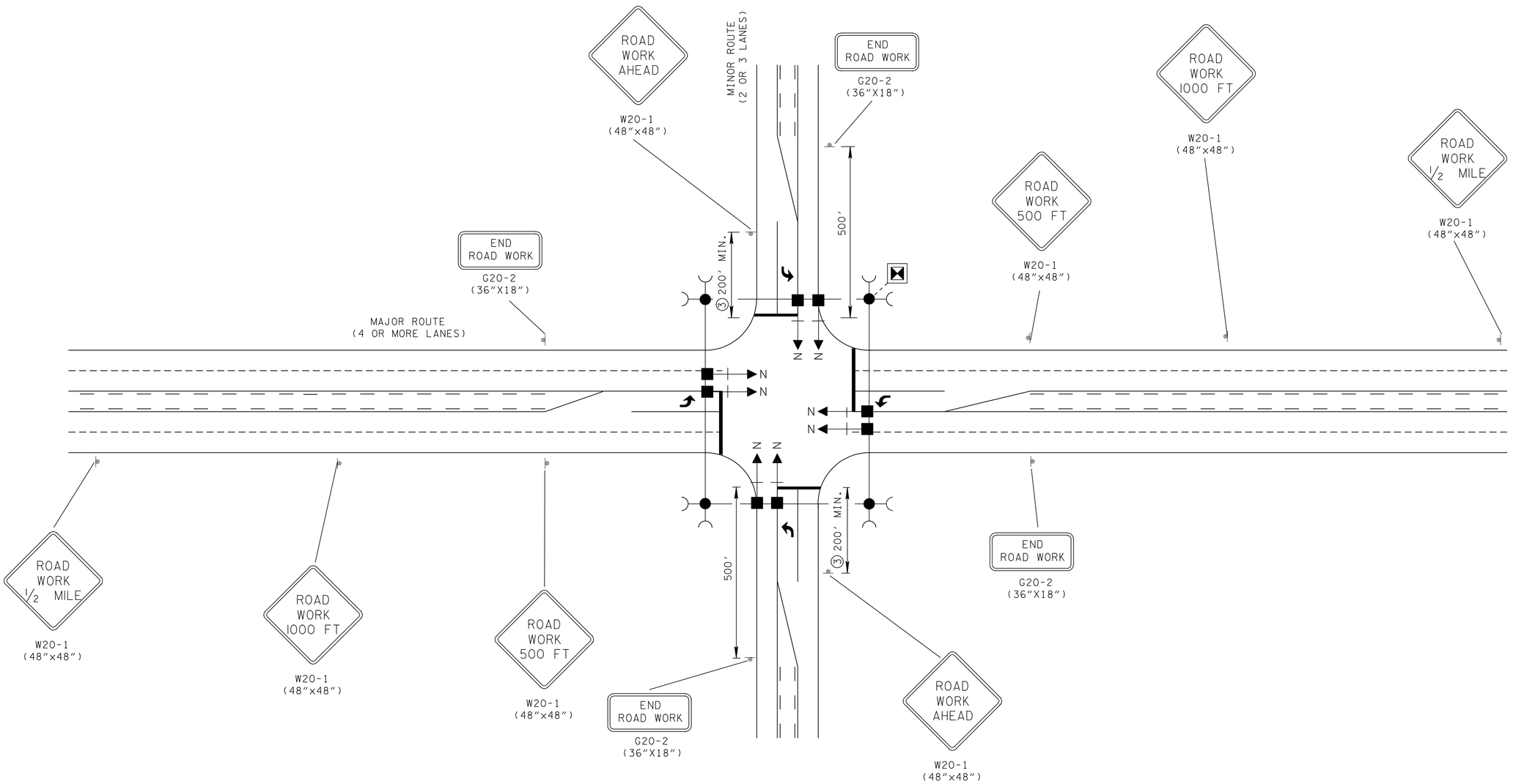
REV. 10-26-98: CHANGED CONSTRUCTION SIGN QUANTITIES.

REV. 12-18-99: IN NOTES FOR ABOVE LAYOUT BLOCK DELETED OLD NOTE NO. (2).

REV. 7-29-03: CHANGED SIZE OF END ROAD WORK CONSTRUCTION SIGN FROM 48"X24" TO 36"X18".

REV. 4-2-12: CHANGED SIGN G20-2A TO G20-2.

TRAFFIC CONTROL FOR SIGNAL ONLY PROJECTS
WITH A 4 OR 5 LANE MAJOR ROUTE AND A 2 OR 3 LANE MINOR ROUTE



NOTES FOR ABOVE LAYOUT

(1) ONE LEFT LANE CLOSED 1000 FT. SIGN (W20-5L), ONE RIGHT LANE CLOSED 1000 FT. SIGN (W20-5R), ONE "LEFT LANE MERGE" SYMBOL SIGN (W4-2L), ONE "RIGHT LANE MERGE" SYMBOL SIGNS (W4-2R), AND TWO "FLAGGER AHEAD" SYMBOL SIGNS (W20-7a) SHALL BE PROVIDED. THE SIZES OF THESE SIGNS SHALL BE 48"X48". SEE STANDARD DRAWING NOS. T-WZ-40 AND T-WZ-41 FOR MORE DETAILS.

(2) SEE TABLE VI-3 IN PART VI OF THE MUTCD (CURRENT EDITION).

LEGEND

- PAD MOUNTED CONTROLLER
- WOOD POLE FOR SIGNAL SUPPORT
- GUYING DEVICE ANGLE ANCHOR
- N — SIGNAL HEAD WITH NUMBER AND BACKPLATE

CONSTRUCTION SIGN QUANTITIES
(ITEM NO. 712-06)

"T" INTERSECTIONS - 125.5 S.F.

4 - LEGGED INTERSECTIONS - 146 S.F.

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL FOR SIGNALS ONLY PROJECTS ON 4 OR 5 LANE MAJOR ROUTES

5-27-98 | T-WZ-51

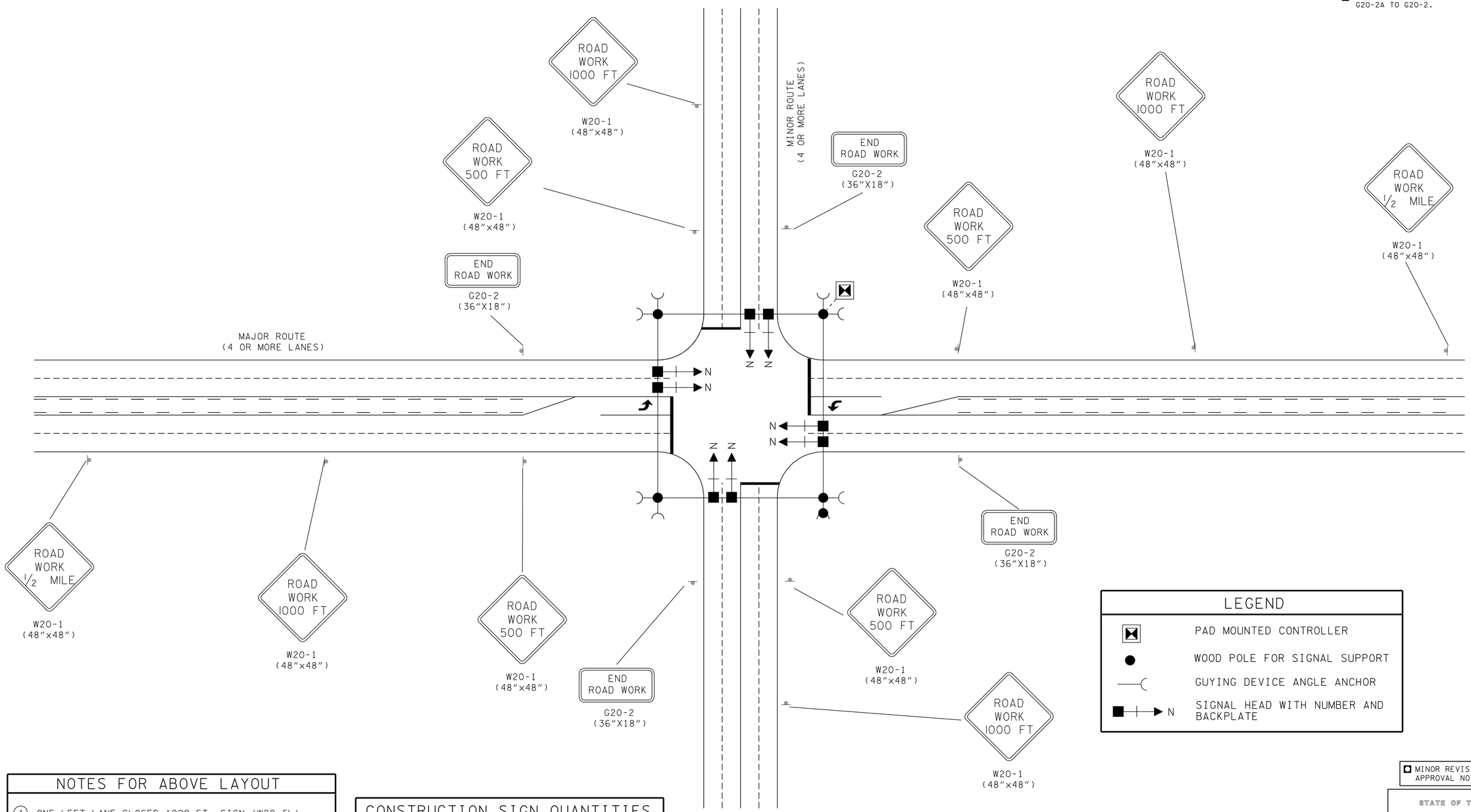
REV. 10-26-98: MODIFIED GENERAL NOTE ①. ELIMINATED ROAD WORK ½ MILE SIGNS FROM MINOR ROUTE. CHANGED CONSTRUCTION SIGN QUANTITIES.

REV. 12-18-99: IN NOTES FOR ABOVE LAYOUT BLOCK DELETED OLD NOTE NO. ②.

REV. 7-29-03: CHANGED SIZE OF END ROAD WORK CONSTRUCTION SIGN FROM 48"X24" TO 36"X18".

REV. 4-2-12: CHANGED SIGN G20-2A TO G20-2.

TRAFFIC CONTROL FOR SIGNAL ONLY PROJECTS WITH 4 OR 5 LANES ENTERING FROM ALL DIRECTIONS



LEGEND

- PAD MOUNTED CONTROLLER
- WOOD POLE FOR SIGNAL SUPPORT
- GUYING DEVICE ANGLE ANCHOR
- N — SIGNAL HEAD WITH NUMBER AND BACKPLATE

NOTES FOR ABOVE LAYOUT

① ONE LEFT LANE CLOSED 1000 FT. SIGN (W20-5L), ONE RIGHT LANE CLOSED 1000 FT. SIGN (W20-5R), ONE "LEFT LANE MERGE" SYMBOL SIGN (W4-2L), AND ONE "RIGHT LANE MERGE" SYMBOL SIGNS (W4-2R), SHALL BE PROVIDED. THE SIZES OF THESE SIGNS SHALL BE 48"X48". SEE STANDARD DRAWING NOS. T-WZ-40 AND T-WZ-41 FOR MORE DETAILS.

CONSTRUCTION SIGN QUANTITIES

(ITEM NO. 712-06)

"T" INTERSECTIONS - 141.5 S.F.

4 - LEGGED INTERSECTIONS - 178 S.F.

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

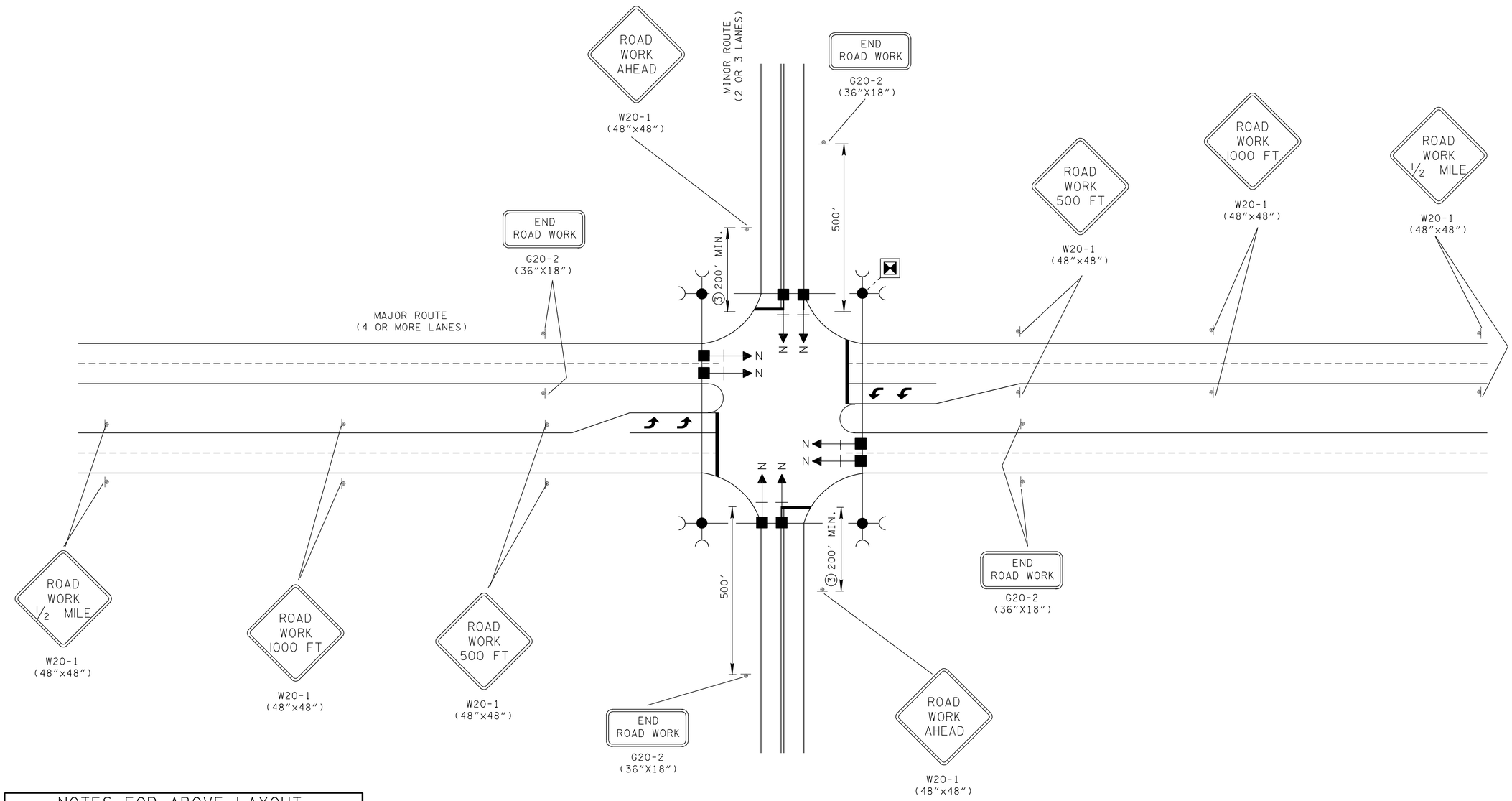
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL FOR SIGNALS ONLY PROJECTS ON 4 OR 5 LANE MAJOR AND MINOR ROUTES

5-27-98 T-WZ-52

- REV. 12-18-99: IN NOTES FOR ABOVE LAYOUT BLOCK DELETED OLD NOTE NO. (2).
- REV. 7-29-03: CHANGED SIZE OF END ROAD WORK CONSTRUCTION SIGN FROM 48"X24" TO 36"X18".
- REV. 4-2-12: CHANGED SIGN G20-2A TO G20-2.

TRAFFIC CONTROL FOR SIGNAL ONLY PROJECTS WITH A 4 OR MORE LANE DIVIDED MAJOR ROUTE AND 2 OR 3 LANES MINOR ROUTE



NOTES FOR ABOVE LAYOUT

(1) ONE LEFT LANE CLOSED 1000 FT. SIGN (W20-5L), ONE RIGHT LANE CLOSED 1000 FT. SIGN (W20-5R), ONE "LEFT LANE MERGE" SYMBOL SIGN (W4-2L), ONE "RIGHT LANE MERGE" SYMBOL SIGNS (W4-2R), AND TWO "FLAGGER AHEAD" SYMBOL SIGNS (W20-7a) SHALL BE PROVIDED. THE SIZES OF THESE SIGNS SHALL BE 48"X48". SEE STANDARD DRAWING NOS. T-WZ-40 AND T-WZ-41 FOR MORE DETAILS.

(2) SEE TABLE VI-3 IN PART VI OF THE MUTCD (CURRENT EDITION).

LEGEND

- PAD MOUNTED CONTROLLER
- WOOD POLE FOR SIGNAL SUPPORT
- GUYING DEVICE ANGLE ANCHOR
- N — SIGNAL HEAD WITH NUMBER AND BACKPLATE

CONSTRUCTION SIGN QUANTITIES

(ITEM NO. 712-06)

"T" INTERSECTIONS	- 230.5 S.F.
4 - LEGGED INTERSECTIONS	- 251 S.F.

- MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

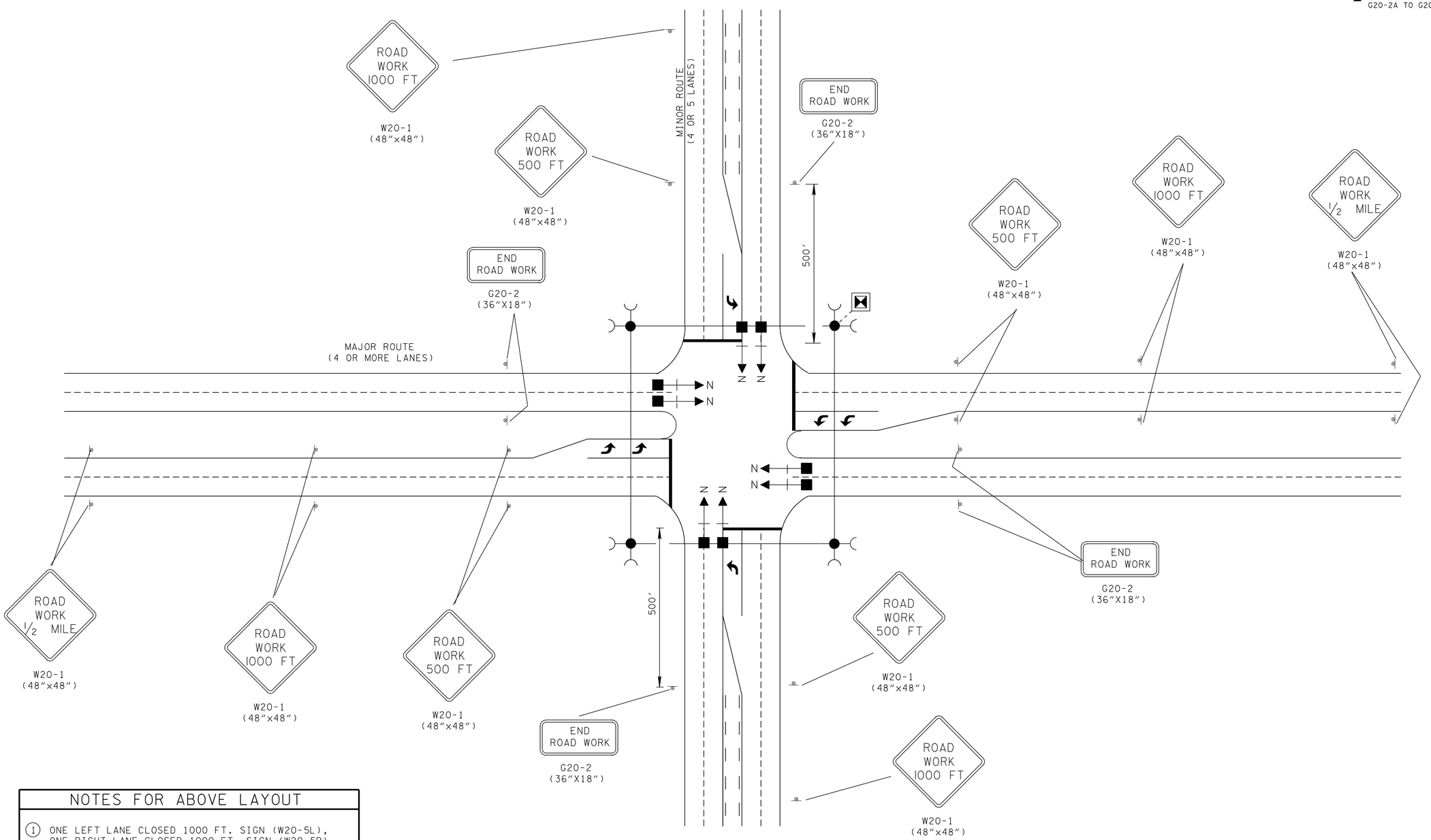
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL FOR SIGNALS ONLY PROJECTS ON 4 OR MORE LANE DIVIDED MAJOR ROUTES

10-26-98 | T-WZ-53

- REV. 12-18-99: IN NOTES FOR ABOVE LAYOUT BLOCK DELETED OLD NOTE NO. (2).
- REV. 7-29-03: CHANGED SIZE OF END ROAD WORK CONSTRUCTION SIGN FROM 48"X24" TO 36"X18".
- REV. 4-2-12: CHANGED SIGN G20-2A TO G20-2.

TRAFFIC CONTROL FOR SIGNAL ONLY PROJECTS WITH 4 OR MORE LANE DIVIDED MAJOR ROUTES AND 4 OR MORE LANE MINOR ROUTES



NOTES FOR ABOVE LAYOUT

(1) ONE LEFT LANE CLOSED 1000 FT. SIGN (W20-5L), ONE RIGHT LANE CLOSED 1000 FT. SIGN (W20-5R), ONE "LEFT LANE MERGE" SYMBOL SIGN (W4-2L), AND ONE "RIGHT LANE MERGE" SYMBOL SIGNS (W4-2R), SHALL BE PROVIDED. THE SIZES OF THESE SIGNS SHALL BE 48"X48". SEE STANDARD DRAWING NOS. T-WZ-40 AND T-WZ-41 FOR MORE DETAILS.

LEGEND

- PAD MOUNTED CONTROLLER
- WOOD POLE FOR SIGNAL SUPPORT
- GUYING DEVICE ANGLE ANCHOR
- N — SIGNAL HEAD WITH NUMBER AND BACKPLATE

CONSTRUCTION SIGN QUANTITIES

(ITEM NO. 712-06)

"T" INTERSECTIONS	- 246.5 S.F.
4 - LEGGED INTERSECTIONS	- 283 S.F.

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL FOR SIGNALS ONLY PROJECTS ON 4 OR MORE LANE DIVIDED MAJOR ROUTES AND 4 OR MORE LANE MINOR ROUTES

10-26-98 | T-WZ-54

SECTION V - LIST OF CURRENT STANDARD DRAWINGS

CHAPTER 1 – STANDARD ROADWAY DRAWINGS

ROADWAY DESIGN STANDARD DRAWINGS

ROADWAY DESIGN STANDARDS

DRAINAGE - CULVERTS AND ENDWALL

DRAINAGE - CATCH BASINS AND MANHOLES

DRAINAGE - NATURAL STREAM DESIGN

ROADWAY AND PAVEMENT APPURTENANCES

SAFETY APPURTENANCES AND FENCE

TRAFFIC CONTROL APPURTENANCES

EROSION PREVENTION AND SEDIMENT CONTROL

CHAPTER 2 – STANDARD STRUCTURE DRAWINGS

STRUCTURE DESIGN STANDARD DRAWINGS

BRIDGE APPURTENANCES ENGLISH (NEW STRUCTURES)

BRIDGE APPURTENANCES ENGLISH (BOX CULVERTS)

BRIDGE APPURTENANCES ENGLISH (LRFD BOX CULVERTS)

BRIDGE APPURTENANCES ENGLISH (BRIDGE REPAIRS)

SECTION V - LIST OF CURRENT STANDARD DRAWINGS

CHAPTER 1 – STANDARD ROADWAY DRAWINGS

ROADWAY DESIGN STANDARD DRAWINGS

ROADWAY DESIGN STANDARDS

RD-A-1	12-18-99	STANDARD ABBREVIATIONS
RD-L-1	10-26-94	STANDARD LEGEND
RD-L-2	09-05-01	STANDARD LEGEND FOR UTILITY INSTALLATIONS
RD-L-3	04-15-04	STANDARD LEGEND FOR SIGNALIZATION AND LIGHTING
RD-L-4	04-15-04	STANDARD LEGEND FOR SIGNALIZATION AND LIGHTING
RD-L-5	05-01-08	STANDARD LEGEND FOR EROSION PREVENTION AND SEDIMENT CONTROL
RD-L-6	03-30-10	STANDARD LEGEND FOR EROSION PREVENTION AND SEDIMENT CONTROL
RD-L-7		STANDARD LEGEND FOR EROSION PREVENTION AND SEDIMENT CONTROL
RD-L-8		STANDARD LEGEND FOR NATURAL STREAM DESIGN
RD-S-11	03-31-03	DESIGN AND CONSTRUCTION DETAILS FOR ROADSIDE SLOPE DEVELOPMENT
RD-S-11A	03-31-03	ROADSIDE DITCH DETAILS FOR DESIGN AND CONSTRUCTION
RD-SA-1	03-31-03	SAFETY APPROACH TO UNDERPASSES GRADING DESIGN AND SLOPE PROTECTION
RD-SE-2	10-26-95	URBAN SUPERELEVATION DETAILS
RD-SE-3	10-26-95	RURAL SUPERELEVATION DETAILS
RD-TS-1	03-31-03	DESIGN STANDARDS FOR LOCAL ROADS AND STREETS
RD-TS-2	03-31-03	DESIGN STANDARDS FOR COLLECTOR ROADS AND STREETS

RD-TS-2A	03-31-03	DESIGN STANDARDS FOR 4-6 LANE COLLECTOR HIGHWAYS WITH DEPRESSED MEDIANS
RD-TS-2B	03-31-03	DESIGN STANDARDS FOR 4-6 LANE COLLECTOR HIGHWAYS WITH FLUSH MEDIANS
RD-TS-3	03-31-03	DESIGN STANDARDS FOR 2-LANE ARTERIAL HIGHWAYS
RD-TS-3A	03-31-03	DESIGN STANDARDS 4-6 LANE ARTERIAL HIGHWAYS WITH DEPRESSED MEDIANS
RD-TS-3B	03-31-03	DESIGN STANDARDS 4-6 LANE ARTERIALS WITH INDEPENDENT ROADWAYS
RD-TS-3C	03-31-03	DESIGN STANDARDS 4-6 LANE ARTERIAL HIGHWAYS WITH FLUSH MEDIANS
RD-TS-4	03-31-03	DESIGN STANDARDS 1 & 2 LANE RAMPS
RD-TS-5	03-31-03	DESIGN STANDARDS FREEWAYS WITH DEPRESSED MEDIANS
RD-TS-5A	03-31-03	DESIGN STANDARDS FREEWAYS WITH INDEPENDENT ROADWAYS
RD-TS-5B	03-31-03	DESIGN STANDARDS FREEWAYS WITH MEDIAN BARRIER
RD-TS-6	03-31-03	TYPICAL CURB AND GUTTER SECTIONS WITH SHOULDER
RD-TS-6A	03-31-03	TYPICAL CURB AND GUTTER SECTIONS WITHOUT SHOULDER
RD-TS-7	03-31-03	DESIGN STANDARDS 2-LANE HIGHWAY WITH CONTINUOUS 2-WAY LEFT-TURN LANE
RD-TS-7A	03-31-03	DESIGN STANDARDS 2-LANE CURB & GUTTER WITH CONTINUOUS 2-WAY LEFT-TURN LANE
RD-TS-8		SHARED USE PATH TYPICAL SECTIONS
RD-TS-9	02-01-12	DESIGN STANDARDS FOR SINGLE LANE URBAN AND RURAL ROUNDABOUTS
RD-TS-10	02-01-12	DESIGN STANDARDS FOR MULTI-LANE URBAN AND RURAL ROUNDABOUTS
RD-UD-3	09-05-96	UNDERDRAIN DETAILS
RD-UD-4	05-27-01	UNDERDRAIN LATERAL DETAILS

RD-UD-6	12-18-94	LATERAL UNDERDRAIN ENDWALL DETAIL FOR 1:1 & 2:1 SLOPES
RD-UD-7	12-18-94	LATERAL UNDERDRAIN ENDWALL DETAIL FOR 3:1 & 4:1 SLOPES
RD-UD-8		LATERAL UNDERDRAIN ENDWALL DETAIL FOR 5:1 SLOPES
RD-UD-9	12-18-94	LATERAL UNDERDRAIN ENDWALL DETAIL FOR 6:1 SLOPES
RD01-S-11	04-04-03	DESIGN AND CONSTRUCTION DETAILS FOR ROADSIDE SLOPE DEVELOPMENT
RD01-S-11A	10-15-02	ROADSIDE DITCH DETAILS FOR DESIGN AND CONSTRUCTION
RD01-S-11B	10-15-02	DESIGN AND CONSTRUCTION DETAILS FOR ROCK CUT SLOPE AND CATCHMENT
RD01-S-12	08-01-09	CLEAR ZONE CRITERIA
RD01-SA-1	10-15-02	SAFETY APPROACH TO UNDERPASSES GRADING DESIGN AND SLOPE PROTECTION
RD01-SD-1		INTERSECTION SIGHT DISTANCE DESIGN AND GENERAL NOTES
RD01-SD-2		INTERSECTION SIGHT DISTANCE LANDSCAPE AND OBSTRUCTION
RD01-SD-3		INTERSECTION SIGHT DISTANCE 2-LANE ROADWAYS
RD01-SD-4		INTERSECTION SIGHT DISTANCE 5-LANE AND 4-LANE UNDIVIDED ROADWAYS
RD01-SD-5		INTERSECTION SIGHT DISTANCE 4-LANE DIVIDED HIGHWAYS
RD01-SD-6		INTERSECTION SIGHT DISTANCE 6-LANE DIVIDED HIGHWAYS
RD01-SD-7		INTERSECTION SIGHT DISTANCE FOR PASSIVE RAILROAD HIGHWAY GRADE CROSSINGS
RD01-SE-2	10-15-02	URBAN SUPERELEVATION DETAILS
RD01-SE-3	10-15-02	RURAL SUPERELEVATION DETAILS
RD01-TS-1	10-15-02	DESIGN STANDARDS FOR LOCAL ROADS AND STREETS

RD01-TS-1A		DESIGN STANDARDS FOR LOW-VOLUME LOCAL ROADS (ADT<=400)
RD01-TS-2	10-15-02	DESIGN STANDARDS FOR COLLECTOR ROADS AND STREETS
RD01-TS-2A	10-15-02	DESIGN STANDARDS 4 AND 6 LANE COLLECTOR HIGHWAYS WITH DEPRESSED MEDIANS
RD01-TS-2B	10-15-02	DESIGN STANDARDS 4 AND 6 LANE COLLECTOR HIGHWAYS WITH FLUSH MEDIANS
RD01-TS-3	10-15-02	DESIGN STANDARD FOR 2-LANE ARTERIAL HIGHWAYS
RD01-TS-3A	10-15-02	DESIGN STANDARDS 4 AND 6 LANE ARTERIAL HIGHWAYS WITH DEPRESSED MEDIANS
RD01-TS-3B	10-15-02	DESIGN STANDARDS 4 AND 6 LANE ARTERIALS WITH INDEPENDENT ROADWAYS
RD01-TS-3C	10-15-02	DESIGN STANDARDS 4 AND 6 LANE ARTERIAL HIGHWAYS WITH FLUSH MEDIANS
RD01-TS-4	10-15-02	DESIGN STANDARDS 1 AND 2 LANE RAMPS
RD01-TS-5	10-15-02	DESIGN STANDARDS FREEWAYS WITH DEPRESSED MEDIANS
RD01-TS-5A	10-15-02	DESIGN STANDARDS FREEWAYS WITH INDEPENDENT ROADWAYS
RD01-TS-5B	10-15-02	DESIGN STANDARDS FREEWAYS WITH MEDIAN BARRIER
RD01-TS-6	10-15-02	TYPICAL CURB AND GUTTER SECTIONS WITH SHOULDER
RD01-TS-6A	01-24-12	TYPICAL CURB AND GUTTER SECTIONS WITHOUT SHOULDER
RD01-TS-7	10-15-02	DESIGN STANDARDS 2-LANE HIGHWAY WITH CONTINUOUS 2-WAY LEFT-TURN LANE
RD01-TS-7A	10-15-02	DESIGN STANDARDS 2-LANE CURB AND GUTTER WITH CONTINUOUS 2-WAY LEFT-TURN LANE

DRAINAGE - CULVERTS AND ENDWALL

D-FLU-1		FLUME DETAILS
D-PB-1	04-15-07	STANDARD DETAILS, CLASS "B" BEDDING AND CULVERT EXCAVATION

D-PB-2	02-01-12	STANDARD DETAILS FOR PLASTIC PIPE INSTALLATION
D-PE-1	02-12-76	TYPE “A” CONCRETE ENDWALL (2:1 SLOPE. 36” TO 78”)
D-PE-3B(1)	07-17-07	CONCRETE ENDWALL TYPE “U” WITH STEEL PIPE GRATE (FOR 18” THRU 48” PIPE) (3:1 SLOPE)
D-PE-3B(2)	05-27-01	CONCRETE ENDWALL TYPE ”U” WITH STEEL PIPE GRATE (FOR 18” THRU 48” PIPE) (3:1 SLOPE)
D-PE-4	07-19-10	STRAIGHT “L” AND “U’ TYPE CONCRETE ENDWALL
D-PE-4B(1)	03-30-00	CONCRETE ENDWALL TYPE "U" WITH STEEL PIPE GRATE (FOR 18" THRU 48" PIPES) (4:1 SLOPE)
D-PE-4B(2)	07-17-07	CONCRETE ENDWALL TYPE "U" WITH STEEL PIPE GRATE (FOR 18" THRU 48" PIPES) (4:1 SLOPE)
D-PE-5	05-27-01	WINGWALLS HORIZONTAL OVAL CONCRETE PIPES
D-PE-6	05-27-01	STRAIGHT ENDWALLS VERTICAL OVAL CONCRETE PIPES
D-PE-6A	05-27-01	WINGWALLS VERTICAL OVAL CONCRETE PIPES
D-PE-6B(1)	03-30-00	CONCRETE ENDWALL TYPE "U" WITH STEEL PIPE GRATE (FOR 18" THRU 48" PIPES) (6:1 SLOPE)
D-PE-6B(2)	07-19-10	CONCRETE ENDWALL TYPE "U" WITH STEEL PIPE GRATE (FOR 18" THRU 48" PIPES) (6:1 SLOPE)
D-PE-7	05-27-01	STRAIGHT ENDWALLS FLATBASE CONCRETE PIPES
D-PE-7A	05-27-01	WINGWALLS FLATBASE CONCRETE PIPES
D-PE-8	01-19-97	DETAIL OF STANDARD PIPE AND PIPE-ARCH CULVERT WITH BEVELED ENDS AND RIP-RAP
D-PE-9	04-25-90	CONCRETE ENDWALLS TYPE "B" (FOR ROUND & SIDE TAPERED INLETS, PIPE SIZES 15" TO 78", ALL SKEWS, 2:1 AND 4:1 SLOPES) 1976
D-PE-9A	10-25-82	GENERAL DIMENSIONS QUANTITIES, ROUND PIPE CONCRETE ENDWALLS TYPE “B” (PIPE SIZES 15" TO 78", ALL SKEWS, 2:1 AND 4:1 SLOPES) 1976
D-PE-9B		GENERAL DIMENSIONS AND QUANTITIES, SIDE TAPER INLETS, CONCRETE ENDWALLS TYPE “B” (PIPE SIZES 15" TO 78", ALL SKEWS, 2:1 AND 4:1 SLOPES) 1976

D-PE-9C	BILL OF STEEL (SHEET 1 OF 4) CONCRETE ENDWALLS TYPE “B” (FOR CONCRETE ROUND AND SIDE TAPERED INLET, PIPE SIZES 15" TO 78", ALL SKEWS, 2:1 SLOPE) 1976
D-PE-9D	BILL OF STEEL (SHEET 2 OF 4) CONCRETE ENDWALLS TYPE “B” (FOR CONCRETE ROUND AND SIDE TAPERED INLET, PIPE SIZES 15" TO 78", ALL SKEWS, 4:1 SLOPE) 1976
D-PE-9E	BILL OF STEEL (SHEET 3 OF 4) CONCRETE ENDWALLS TYPE “B” (FOR STEEL ROUND AND SIDE TAPERED INLET, PIPE SIZES 15" TO 78", ALL SKEWS, 2:1 SLOPE) 1976
D-PE-9F	BILL OF STEEL (SHEET 4 OF 4) CONCRETE ENDWALLS TYPE “B” (FOR STEEL ROUND AND SIDE TAPERED INLET, PIPE SIZES 15" TO 78", ALL SKEWS, 4:1 SLOPE) 1976
D-PE-15A	15” CONCRETE ENDWALL CROSS DRAIN
D-PE-15B	15” CONCRETE ENDWALL CROSS DRAIN
D-PE-18A	18” CONCRETE ENDWALL CROSS DRAIN
D-PE-18B	18” CONCRETE ENDWALL CROSS DRAIN
D-PE-24A	24” CONCRETE ENDWALL CROSS DRAIN
D-PE-24B	24” CONCRETE ENDWALL CROSS DRAIN
D-PE-30A	30” CONCRETE ENDWALL CROSS DRAIN WITH STEEL PIPE GRATE
D-PE-30B	30” CONCRETE ENDWALL CROSS DRAIN WITH STEEL PIPE GRATE
D-PE-36A	36” CONCRETE ENDWALL CROSS DRAIN WITH STEEL PIPE GRATE
D-PE-36B	36” CONCRETE ENDWALL CROSS DRAIN WITH STEEL PIPE GRATE
D-PE-42A	42” CONCRETE ENDWALL CROSS DRAIN WITH STEEL PIPE GRATE
D-PE-42B	42” CONCRETE ENDWALL CROSS DRAIN WITH STEEL PIPE GRATE
D-PE-48A	48” CONCRETE ENDWALL CROSS DRAIN WITH STEEL PIPE GRATE

D-PE-48B		48” CONCRETE ENDWALL CROSS DRAIN WITH STEEL PIPE GRATE
D-PE-99		PIPE GRATE & SKEWED CONNECTION DETAILS FOR “U” ENDWALLS
D-PG-3	04-15-97	FERROUS AND ALUMINUM CORRUGATED METAL PIPE
D-PG-4	07-29-94	FERROUS AND ALUMINUM CORR. METAL PIPE-ARCHES
D-PO-1	05-27-01	OVAL & FLAT BASE CONCRETE CULVERT PIPE
D-PS-1	03-15-76	STRUTTING DETAILS FOR CORRUGATED METAL & STRUCTURAL PLATE ROUND PIPE
D-SEW-1A		SIDE DRAIN CONCRETE ENDWALL WITH STEEL PIPE GRATE
D-SEW-6DA	07-19-10	CONCRETE ENDWALL TYPE "SD" WITH STEEL PIPE GRATE (FOR 15" THRU 48" PIPES) (6:1 SLOPE)
D-SEW-6DB	10-26-92	CONCRETE ENDWALL TYPE "SD" WITH STEEL PIPE GRATE (FOR 15" THRU 48" PIPES) (6:1 SLOPE)
D-SEW-6DC	07-19-10	CONCRETE ENDWALL TYPE "SD" WITH STEEL PIPE GRATE (FOR 18" THRU 30" PIPES) (6:1 SLOPE)
D-SEW-6DD	04-15-05	CONCRETE ENDWALL TYPE "SD" WITH STEEL PIPE GRATE (FOR 18" THRU 30" PIPES) (6:1 SLOPE)
D-SEW-12D	04-20-12	CONCRETE ENDWALL TYPE “SD” WITH STEEL PIPE GRATE (FOR 15” AND 18” PIPES) (12:1 SLOPE)

DRAINAGE - CATCH BASINS AND MANHOLES

D-CB-10LPC	07-29-04	LOW PROFILE LOWERED CURB 32" X 26" RECTANGULAR CONCRETE NO. 10LPC CATCH BASIN
D-CB-10RA		STANDARD PRECAST 48" CIRCULAR NO. 10 CATCH BASIN (FOR USE WITH 6" NONMOUNTABLE CURB)
D-CB-10S	07-29-02	STANDARD RECTANGULAR CONCRETE N0. 10 CATCH BASIN
D-CB-10SB		STANDARD 4' X 4' SQUARE CONCRETE NO. 10 CATCH BASIN
D-CB-12B	07-29-02	STANDARD RECTANGULAR BRICK NO. 12 CATCH BASIN
D-CB-12LP	07-29-04	LOW PROFILE 32" X 32" SQUARE CONCRETE NO. 12LP CATCH BASIN

D-CB-12P	07-29-02	STANDARD PRECAST RECTANGULAR CONCRETE NO.12 CATCH BASIN
D-CB-12RA	05-27-01	STANDARD PRECAST 48" CIRCULAR NO. 12 CATCH BASIN (FOR USE WITH 6" NONMOUNTABLE CURB)
D-CB-12RB	05-27-01	STANDARD PRECAST 60" AND 72" CIRCULAR NO. 12 CATCH BASIN (FOR USE WITH 6" NONMOUNTABLE CURB)
D-CB-12RC	05-27-01	STANDARD PRECAST 84" THRU 120" CIRCULAR NO. 12 CATCH BASIN (FOR USE WITH 6" NONMOUNTABLE CURB)
D-CB-12S	07-29-02	STANDARD RECTANGULAR CONCRETE NO. 12 CATCH BASIN
D-CB-12SB	07-29-02	STANDARD 4' X 4' SQUARE CONCRETE NO. 12 CATCH BASIN
D-CB-12SC	09-11-02	STANDARD 5'2" X 5'2" SQUARE CONCRETE NO. 12 CATCH BASIN
D-CB-12SD	09-11-02	STANDARD 7' X 7' SQUARE CONCRETE NO. 12 CATCH BASIN
D-CB-12SE	05-05-05	STANDARD 9' X 9' SQUARE CONCRETE NO. 12 CATCH BASIN
D-CB-13B	07-29-02	STANDARD RECTANGULAR BRICK NO. 13 CATCH BASIN
D-CB-13P	07-29-02	STANDARD PRECAST RECTANGULAR CONCRETE NO. 13 CATCH BASIN
D-CB-13RA	05-27-01	STANDARD PRECAST 48" CIRCULAR NO. 13 CATCH BASIN (FOR USE WITH 6" NONMOUNTABLE CURB)
D-CB-13RB	05-27-01	STANDARD PRECAST 60" AND 72" CIRCULAR NO. 13 CATCH BASIN (FOR USE WITH 6" NONMOUNTABLE CURB)
D-CB-13RC	05-27-01	STANDARD PRECAST 84" THRU 120" CIRCULAR NO. 13 CATCH BASIN (FOR USE WITH 6" NONMOUNTABLE CURB)
D-CB-13S	07-29-02	STANDARD RECTANGULAR CONCRETE NO. 13 CATCH BASIN
D-CB-14B	07-29-02	STANDARD RECTANGULAR BRICK NO. 14 CATCH BASIN
D-CB-14P	07-29-02	STANDARD PRECAST RECTANGULAR CONCRETE NO. 14 CATCH BASIN
D-CB-14RB	05-27-01	STANDARD PRECAST CIRCULAR NO. 14RB CATCH BASIN
D-CB-14S	07-29-02	STANDARD RECTANGULAR CONCRETE NO. 14 CATCH BASIN

D-CB-14SE	05-05-05	STANDARD 9' X 9' SQUARE CONCRETE NO. 14 CATCH BASIN
D-CB-16B	07-29-02	STANDARD RECTANGULAR BRICK NO. 16 CATCH BASIN
D-CB-16S	07-29-02	STANDARD RECTANGULAR CONCRETE NO. 16 CATCH BASIN
D-CB-17S	07-29-02	STANDARD RECTANGULAR CONCRETE NO. 17 CATCH BASIN
D-CB-25B	07-29-02	STANDARD RECTANGULAR BRICK NO. 25 CATCH BASIN (FOR USE WITH 6" MOUNTABLE CURB)
D-CB-25LP	07-29-04	STANDARD LOW PROFILE 32" X 32" SQUARE CONCRETE NO. 25LP CATCH BASIN (FOR USE WITH 6" MOUNTABLE CURB)
D-CB-25P	07-29-02	STANDARD PRECAST RECTANGULAR CONCRETE NO. 25 CATCH BASIN (FOR USE WITH 6" MOUNTABLE CURB)
D-CB-25RA	05-27-01	STANDARD PRECAST 48" CIRCULAR NO. 25 CATCH BASIN (FOR USE WITH 6" MOUNTABLE CURB)
D-CB-25RB	05-27-01	STANDARD PRECAST CIRCULAR NO. 25 CATCH BASIN (FOR USE WITH 6" MOUNTABLE CURB)
D-CB-25S	07-29-02	STANDARD RECTANGULAR CONCRETE NO. 25 CATCH BASIN (FOR USE WITH 6" MOUNTABLE CURB)
D-CB-25SB	07-29-02	STANDARD 4' X 4' SQUARE CONCRETE NO. 25 CATCH BASIN (FOR USE WITH 6" MOUNTABLE CURB)
D-CB-25SC	09-11-02	STANDARD 5'2" X 5'2" SQUARE CONCRETE NO. 25 CATCH BASIN (FOR USE WITH 6" MOUNTABLE CURB)
D-CB-25SD	09-11-02	STANDARD 7' X 7' SQUARE CONCRETE NO. 25 CATCH BASIN (FOR USE WITH 6" MOUNTABLE CURB)
D-CB-25SE	05-05-05	STANDARD 9' X 9' SQUARE CONCRETE NO. 25 CATCH BASIN (FOR USE WITH 6" MOUNTABLE CURB)
D-CB-26P	07-29-02	STANDARD PRECAST RECTANGULAR CONCRETE NO. 26 CATCH BASIN (FOR USE WITH 6" MOUNTABLE CURB)
D-CB-26S	07-29-02	STANDARD RECTANGULAR CONCRETE NO. 26 CATCH BASIN (FOR USE WITH 6" MOUNTABLE CURB)
D-CB-27S	07-29-02	STANDARD RECTANGULAR CONCRETE NO. 27 CATCH

		BASIN (FOR USE WITH 6" MOUNTABLE CURB)
D-CB-28B	07-29-02	STANDARD RECTANGULAR BRICK NO. 28 CATCH BASIN (FOR USE WITH 4" MOUNTABLE CURB)
D-CB-28LP	07-29-04	LOW PROFILE 32" X 32" SQUARE CONCRETE NO. 28LP CATCH BASIN (FOR USE WITH 4" MOUNTABLE CURB)
D-CB-28P	07-29-02	STANDARD PRECAST RECTANGULAR CONCRETE NO. 28 CATCH BASIN (FOR USE WITH 4" MOUNTABLE CURB)
D-CB-28RA	05-27-01	STANDARD PRECAST 48" CIRCULAR NO. 28 CATCH BASIN (FOR USE WITH 4" MOUNTABLE CURB)
D-CB-28RB	05-27-01	STANDARD PRECAST CIRCULAR NO. 28 CATCH BASIN (FOR USE WITH 4" MOUNTABLE CURB)
D-CB-28S	07-29-02	STANDARD RECTANGULAR CONCRETE NO. 28 CATCH BASIN (FOR USE WITH 4" MOUNTABLE CURB)
D-CB-29P	07-29-02	STANDARD PRECAST RECTANGULAR CONCRETE NO. 29 CATCH BASIN (FOR USE WITH 4" MOUNTABLE CURB)
D-CB-29S	07-29-02	STANDARD RECTANGULAR CONCRETE NO. 29 CATCH BASIN (FOR USE WITH 4" MOUNTABLE CURB)
D-CB-31R	10-26-03	STANDARD PRECAST CIRCULAR NO. 31 CATCH BASIN (FOR USE UNDER CONCRETE MEDIAN BARRIER WALL)
D-CB-31SD	09-11-02	STANDARD 7' X 7' SQUARE CONCRETE NO. 31 CATCH BASIN (FOR USE UNDER CONCRETE MEDIAN BARRIER WALL)
D-CB-31SE	02-13-04	STANDARD 9' X 9' SQUARE CONCRETE NO. 31 CATCH BASIN (FOR USE UNDER CONCRETE MEDIAN BARRIER WALL)
D-CB-32LP	06-30-03	STANDARD 80” X 32” RECTANGULAR CONCRETE NO. 32 CATCH BASIN (FOR USE UNDER CONCRETE MEDIUM BARRIER WALL)
D-CB-38RB	09-05-04	STANDARD PRECAST CIRCULAR NO. 38 CATCH BASIN
D-CB-38S	07-29-02	STANDARD 32" X 32" SQUARE CONCRETE NO. 38 CATCH BASIN
D-CB-38SB	09-05-04	STANDARD 4' X 4' SQUARE CONCRETE NO. 38 CATCH BASIN
D-CB-38SC	09-05-04	STANDARD 5'2" X 5'2" SQUARE CONCRETE NO. 38 CATCH BASIN
D-CB-39RB	05-27-01	STANDARD PRECAST CIRCULAR NO. 39 CATCH BASIN

D-CB-39S	07-29-02	STANDARD 4' X 4' SQUARE CONCRETE NO. 39 CATCH BASIN
D-CB-39SC		STANDARD 5'2" X 5'2" SQUARE CONCRETE NO. 39 CATCH BASIN
D-CB-39SD	09-11-02	STANDARD 7' X 7' SQUARE CONCRETE NO. 39 CATCH BASIN
D-CB-39SE	02-13-04	STANDARD 9' X 9' SQUARE CONCRETE NO. 39 CATCH BASIN
D-CB-40S	07-29-02	STANDARD 4' X 8' RECTANGULAR CONCRETE NO. 40 CATCH BASIN
D-CB-40SE	05-05-05	STANDARD 9’ X 9’ SQUARE CONCRETE NO. 40. CATCH BASIN
D-CB-41LP	07-29-04	LOW PROFILE 32" X 32" SQUARE CONCRETE NO. 41LP CATCH BASIN (FOR USE UNDER CONCRETE MEDIAN BARRIER WALL)
D-CB-41P	07-29-02	STANDARD 4' X 3' PRECAST RECTANGULAR CONCRETE NO. 41 CATCH BASIN (FOR USE UNDER CONCRETE MEDIAN BARRIER WALL)
D-CB-41RB	05-27-01	STANDARD PRECAST CIRCULAR NO. 41 CATCH BASIN (FOR USE UNDER CONCRETE MEDIAN BARRIER WALL)
D-CB-41S	07-29-02	STANDARD 4' X 3' RECTANGULAR CONCRETE NO. 41 CATCH BASIN (FOR USE UNDER CONCRETE MEDIAN BARRIER WALL)
D-CB-41SB	07-29-02	STANDARD 4' X 4' SQUARE CONCRETE NO. 41 CATCH BASIN (FOR USE UNDER CONCRETE MEDIAN BARRIER WALL)
D-CB-41SC	09-11-02	STANDARD 5'2" X 5'2" SQUARE CONCRETE NO. 41 CATCH BASIN (FOR USE UNDER CONCRETE MEDIAN BARRIER WALL)
D-CB-41SD	09-11-02	STANDARD 7' X 7' SQUARE CONCRETE NO. 41 CATCH BASIN (FOR USE UNDER CONCRETE MEDIAN BARRIER WALL)
D-CB-41SE	05-05-05	STANDARD 9' X 9' SQUARE CONCRETE NO. 41 CATCH BASIN (FOR USE UNDER CONCRETE MEDIAN BARRIER WALL)
D-CB-42RB	05-27-01	STANDARD PRECAST CIRCULAR NO. 42 CATCH BASIN
D-CB-42S	01-19-05	STANDARD 32" X 32" SQUARE CONCRETE NO. 42 CATCH BASIN
D-CB-42SB	07-29-04	STANDARD 4' X 4' SQUARE CONCRETE NO. 42 CATCH BASIN

D-CB-42SC		STANDARD 5'2" X 5'2" SQUARE CONCRETE NO. 42 CATCH BASIN
D-CB-42SD	09-11-02	STANDARD 7' X 7' SQUARE CONCRETE NO. 42 CATCH BASIN
D-CB-43R	05-27-01	STANDARD PRECAST CIRCULAR NO. 43R CATCH BASIN
D-CB-43SB	07-29-02	STANDARD 8' X 4' RECTANGULAR CONCRETE NO. 43SB CATCH BASIN
D-CB-43SC	07-29-02	STANDARD 8' X 5'2" RECTANGULAR CONCRETE NO. 43SC CATCH BASIN
D-CB-44SE	05-05-05	STANDARD 9' X 9' SQUARE CONCRETE NO. 44 CATCH BASIN
D-CB-45S	05-27-01	STANDARD 8' X 4' RECTANGULAR CONCRETE NO. 45 CATCH BASIN (FOR USE UNDER CONCRETE MEDIAN BARRIER WALL)
D-CB-46SE	05-05-05	STANDARD 9' X 9' SQUARE CONCRETE NO. 46 CATCH BASIN (FOR USE UNDER CONCRETE MEDIAN BARRIER WALL)
D-CB-51SC	09-11-02	STANDARD 5'2" X 5'2" SQUARE CONCRETE NO. 51 CATCH BASIN (FOR USE IN FRONT OF CONCRETE RETAINING WALL)
D-CB-51SD		STANDARD 7' X 7' SQUARE CONCRETE NO. 51 CATCH BASIN FOR USE IN FRONT OF CONCRETE RETAINING WALL)
D-CB-51SE		STANDARD 9’ X 9’ SQUARE CONCRETE NO. 51 CATCH BASIN
D-CB-52SE		STANDARD 9’ x 9’ SQUARE CONCRETE NO. 52 CATCH BASIN
D-CBB-12A	05-27-01	TYPE "B" CAST IRON FRAME, GRATE & NONMOUNTABLE INLET DETAILS FOR NOS. 10, 12, 14, 16, AND 17 TYPE CATCH BASINS
D-CBB-12B	05-27-01	TYPE "B" CAST IRON FRAME, GRATE & 6" MOUNTABLE INLET DETAILS FOR NOS. 25, 26 AND 27 TYPE CATCH BASINS
D-CBB-12C	05-27-01	TYPE "B" CAST IRON FRAME, GRATE & 4" MOUNTABLE INLET DETAILS FOR NOS. 28 AND 29 TYPE CATCH BASINS
D-CBB-13	05-27-01	TYPE "B" CAST IRON FRAME, GRATE & NONMOUNTABLE INLET DETAILS FOR NO. 13 TYPE CATCH BASINS
D-CBB-31	05-27-01	TYPE "B" CAST IRON FRAME, GRATE & INLET DETAILS FOR NOS. 31, 41, 45, 46, & 51 TYPE CATCH BASINS
D-CBB-42	05-27-01	CAST IRON GRATE DETAILS FOR NOS. 42, 43 & 44 TYPE

		CATCH BASINS
D-JBS-1	07-29-02	STANDARD 32" X 32" SQUARE CONCRETE NO. 1 JUNCTION BOX
D-JBS-2	07-29-02	STANDARD 4' X 4' SQUARE CONCRETE NO. 2 JUNCTION BOX
D-JBS-3	09-11-02	STANDARD 5'2" X 5'2" SQUARE CONCRETE NO. 3 JUNCTION BOX
D-JBS-4	09-11-02	STANDARD 7' X 7' SQUARE CONCRETE NO. 4 JUNCTION BOX
D-JBS-5	09-11-02	STANDARD 9' X 9' SQUARE CONCRETE NO. 5 JUNCTION BOX
D-MH-2	05-27-01	STANDARD MASONRY & PRECAST NO. 3 MANHOLE
D-MH-3	04-15-00	STANDARD PRECAST CIRCULAR LID DETAILS FOR NO. 3 MANHOLE
D-MH-3A	05-27-01	STANDARD PRECAST CIRCULAR LID DETAILS FOR NO. 3 MANHOLE (108" AND 120" DIA.)
D-MH-4	05-27-01	STANDARD NO. 3 MANHOLE CASTINGS AND STEPS
D-MH-5	09-11-02	STANDARD 5'2" X 5'2" SQUARE CONCRETE NO. 3 MANHOLE
D-MH-6	09-11-02	STANDARD 7' X 7' SQUARE CONCRETE NO. 3 MANHOLE
D-MH-7	09-11-02	STANDARD 9' X 9' SQUARE CONCRETE NO. 3 MANHOLE
D-SDS-1	07-29-02	STANDARD 32" X 32" SQUARE CONCRETE NO. 1 SPRING DRAIN BOX
D-SDS-2A	07-29-02	STANDARD 4' X 4' SQUARE CONCRETE NO. 2A SPRING DRAIN BOX
D-SDS-2B	07-29-02	STANDARD 4' X 4' SQUARE CONCRETE NO. 2B SPRING DRAIN BOX
D-SDS-3A	07-29-02	STANDARD 5'2" X 5'2" SQUARE CONCRETE NO. 3A SPRING DRAIN BOX
D-SLD-1	05-27-01	SLOTTED DRAINS
D-SLD-2	05-27-01	SLOTTED DRAINS
D-SLD-3	05-27-01	SLOTTED DRAINS
D-TD-1		TRENCH DRAIN

DRAINAGE – NATURAL STREAM DESIGN

D-NSD-1	BOULDER CLUSTERS
D-NSD-2	ROCK VANES
D-NSD-3	LOG DEFELECTORS AND LOG VANES
D-NSD-4	LOG DROPS AND STEP POOLS
D-NSD-5	BOULDER RIFFLES
D-NSD-6	CONSTRUCTED RIFFLES
D-NSD-7	COCONUT FIBER ROLLS AND LIVE SILTATION
D-NSD-8	LIVE FASCINES AND WILLOW CUTTINGS
D-NSD-9	BRUSH MATTRESS
D-NSD-10	LARGE WOODY DEBRIS
D-NSD-11	VEGETATED RIPRAP AND GABIONS
D-NSD-12	VEGETATED MSE WALLS
D-NSD-13	LONGITUDINAL STONE TOE AND ARTICULATED CONCRETE MAT

ROADWAY AND PAVEMENT APPURTENANCES

RP-CS-1	09-29-10	CONCRETE SHOULDER RUMBLE STRIP DETAIL (FOR 4-LANE DIVIDED HIGHWAY)
RP-CS-2	09-29-10	CONCRETE SHOULDER RUMBLE STRIP DETAIL (FOR 6-LANE OR WIDER DIVIDED HIGHWAY)
RP-D-15	07-15-08	DETAILS OF STANDARD CONCRETE DRIVEWAYS
RP-D-16	07-15-08	DETAILS OF LOWERED STANDARD CONCRETE DRIVEWAYS
RP-DHO-1	10-26-93	MEDIAN OPENINGS ON 4-LANE DIVIDED HIGHWAY
RP-H-3	04-13-11	HANDICAP RAMP AND TRUNCATED DOME SURFACE DETAIL
RP-H-4	04-13-11	PERPENDICULAR CURB RAMP
RP-H-5	04-13-11	PARALLEL CURB RAMP

RP-H-6	04-13-11	MEDIAN CROSSING
RP-H-7	04-13-11	PERPENDICULAR HANDICAP RAMP FOR 20’ THRU 75’ RADIUS
RP-H-8	04-13-11	PERPENDICULAR HANDICAP RAMP FOR 20’ THRU 75’ RADIUS
RP-H-9	04-13-11	PARALLEL HANDICAP RAMP FOR 20’ THRU 75’ RADIUS
RP-I-5	12-18-96	EXAMPLES OF STREET AND ALLEY INTERSECTIONS
RP-J-1	10-26-00	PORTLAND CEMENT CONCRETE PAVEMENT JOINT TYPES AND SPACING
RP-J-3	10-26-00	PORTLAND CEMENT CONCRETE PAVEMENT JOINT TYPES AND SPACING
RP-J-5	07-01-01	TYPICAL ACCELERATION AND DECELERATION LANE JOINT TYPES AND SPACING FOR CONCRETE RAMPS
RP-J-7	01-30-12	CONCRETE RAMP JOINT TYPES AND SPACING
RP-J-9	02-02-12	CONTRACTION AND CONSTRUCTION JOINTS FOR CONCRETE PAVEMENT
RP-J-11	07-29-96	3/4" AND 1-3/4" EXPANSION AND EDGE PAVEMENT JOINTS
RP-J-13	03-20-91	3/4" AND 1-3/4" ELASTOMERIC COMPRESSION JOINT SEALS
RP-J-15	01-19-02	LONGITUDINAL CONTRACTION AND CONSTRUCTION JOINTS
RP-J-17	02-02-12	DOWEL ASSEMBLY DEVICES
RP-J-18	02-02-12	DOWEL ASSEMBLY DEVICES
RP-J-19	02-02-12	DOWEL ASSEMBLY DEVICES
RP-J-23	01-24-12	CONCRETE PAVEMENT REPAIR DETAILS
RP-J-24	05-27-01	CONCRETE PAVEMENT SPALL AND RANDOM CRACK REPAIR DETAILS
RP-J-25	05-27-01	CONCRETE PAVEMENT JOINT REPAIR DETAILS
RP-MC-1	02-28-02	STANDARD 4" SLOPING (MOUNTABLE) CONCRETE CURBS AND CONCRETE CURBS AND GUTTERS

RP-MC-2	02-28-02	STANDARD 6" SLOPING (MOUNTABLE) CONCRETE CURBS AND CONCRETE CURBS AND GUTTERS
RP-NMC-10	07-29-03	STANDARD VERTICAL (NONMOUNTABLE) CONCRETE CURBS AND CONCRETE CURBS AND GUTTERS
RP-NMC-11	02-28-02	STANDARD VERTICAL (NONMOUNTABLE) CONCRETE CURBS AND CONCRETE CURBS AND GUTTERS
RP-PMR-1	05-27-01	STANDARD DETAILS FOR PROPOSED PERMANENT MAINTENANCE RAMP
RP-R-1	05-27-01	STANDARD RAMPS TO SIDE ROADS
RP-R-2		STANDARD CONSTRUCTION DETAILS FOR ROUNDABOUTS
RP-S-7	07-29-96	DETAILS FOR STANDARD CONCRETE SIDEWALKS
RP-S-8	01-19-93	DETAILS FOR STANDARD CONCRETE STEPS AND PIPE HANDRAILS

SAFETY APPURTENANCES AND FENCE

S-F-1		HIGH VISIBILITY FENCE
S-F-10	06-01-09	STANDARD RIGHT-OF-WAY STOCK FENCE
S-F-10A	06-01-09	STANDARD RIGHT-OF-WAY STOCK FENCE WITH TIMBER POSTS
S-F-10B	05-14-10	STANDARD RIGHT-OF-WAY CHAIN LINK FENCE
S-F-10C	05-14-10	RIGHT-OF-WAY FENCE AT BRIDGES AND BOX CULVERTS
S-F-10D		RIGHT-OF-WAY FENCE LOCATIONS AT INTERCHANGES
S-FG-11	05-14-10	STANDARD STOCK FENCE GATE
S-FG-20	01-24-08	EXAMPLES OF WATER GATES AND WATER CROSSINGS
S-GR-11	11-26-07	W-BEAM & THRIE BEAM BARRIER RAIL AND RUB RAIL ALTERNATES
S-GR-12	05-27-03	W-BEAM BARRIER POST DETAILS AND SPECIFICATIONS
S-GR-13	05-27-03	BARRIER RAIL MOUNTING, POST BLOCK-OUTS WITH VERTICAL ADJUSTMENT HOLES
S-GR-13A		BARRIER RAIL MOUNTING POST FOR PLASTIC BLOCK-OUTS WITH HORIZONTAL ADJUSTMENT HOLES

S-GR-14	04-17-12	W-BEAM BARRIER FASTENING HARDWARE AND BRIDGE APPROACH DELINEATORS
S-GR-15	06-30-05	W-BEAM BARRIER TERMINAL ELEMENT DETAILS
S-GR-16	05-27-01	GUARDRAIL BARRIER TREATMENT FOR PIERS IN MEDIAN
S-GR-17	09-11-02	BRIDGE END PROTECTION IN MEDIAN FOR DUAL BRIDGE
S-GR-18	05-15-08	GUARDRAIL TERMINAL (TYPE IN-LINE) AND SHOULDER LINE DETAIL
S-GR-19	06-01-09	GUARDRAIL TERMINAL ANCHORS, TYPE 12 AND TYPE 13
S-GR-19A	06-30-09	TYPE 12 BURIED-IN-BACKSLOPE GUARDRAIL TERMINAL
S-GR-19B	05-15-08	TYPE 12 ALTERNATE BURIED IN BACKSLOPE GUARDRAIL TERMINAL
S-GR-19C		GUARDRAIL TERMINAL ANCHOR, TYPE 13 ALTERNATE
S-GR-20	05-27-01	MEDIAN DIVIDER GUARDRAIL AND GUARDRAIL TERMINAL ANCHORS
S-GR-21	06-30-09	LENGTH OF NEED AND TERMINAL REQUIREMENTS IN FILLS
S-GR-22	03-10-10	GUARDRAIL ATTACHMENT TO CONCRETE DECKS OF BOX AND SLAB CULVERTS AND BRIDGES
S-GR-23	09-11-02	GUARDRAIL ATTACHMENT TO STRUCTURES AND PROTECTIVE GUARDRAIL AT BRIDGE ENDS DETAILS
S-GR-23A		GUARDRAIL ATTACHMENT TO BRIDGE END FOR LOW-VOLUME LOCAL ROADS (ADT<400)
S-GR-24	05-15-08	GUARDRAIL END TERMINALS AT BRIDGE ENDS
S-GR-26	03-15-08	SLOTTED GUARDRAIL TERMINAL ANCHOR (TYPE 21)
S-GR-27	05-27-03	GUARDRAIL TERMINAL ANCHOR (TYPE 21) ELEMENT ASSEMBLY DETAILS
S-GR-28	06-30-05	GUARDRAIL TERMINAL ANCHOR (TYPE 21) POST AND ASSEMBLY DETAILS
S-GR-38	06-30-09	DETAILS FOR CONSTRUCTION OF EARTH PAD FOR TYPE 38 GUARDRAIL END TERMINALS
S-GR-38A	06-30-05	DETAILS FOR CONSTRUCTION OF ALTERNATE EARTH PAD FOR TYPE 38 GUARDRAIL END TERMINALS

S-GR-39	05-27-01	DETAILS FOR CONSTRUCTION OF EARTH PAD FOR TYPE 21 GUARDRAIL END TERMINALS
S-GR-43		TANGENTIAL GUARDRAIL TERMINAL ANCHOR (TYPE 38) POST LAYOUT AND ERECTION DETAILS
S-GR-44		TANGENTIAL GUARDRAIL TERMINAL ANCHOR (TYPE 38) (2 TUBE) GUARDRAIL ELEMENT POST AND ASSEMBLY DETAILS
S-GR-45		LONG SPAN GUARDRAIL-ONE POST OMITTED
S-GR-46		CURVED GUARDRAIL
S-MB-1	06-06-11	STANDARD CONCRETE MEDIAN BARRIER
S-MB-2	05-27-01	STANDARD CONCRETE MEDIAN BARRIER (BRIDGE PIER PROTECTION)
S-MB-3	10-26-99	STANDARD CONCRETE GLARE SCREEN MEDIAN BARRIER
S-MB-3A	10-26-99	STANDARD CONCRETE GLARE SCREEN MEDIAN BARRIER
S-MB-4	05-27-01	STANDARD CONCRETE GLARE SCREEN MEDIAN BARRIER (BRIDGE PIER PROTECTION)
S-MB-7		STANDARD DETAILS FOR CONCRETE BARRIER WALL INCLUDING GUARDRAIL ATTACHMENT
S-MB-8		STANDARD DETAILS FOR CONCRETE BARRIER WALL AT BRIDGE BENTS INCLUDING GUARDRAIL ATTACHMENT
S-RP-2	01-19-99	STANDARD CONCRETE RIGHT-OF-WAY MARKERS
S-SSMB-1		32” SINGLE SLOPE CONCRETE BARRIER WALL
S-SSMB-2		51” SINGLE SLOPE CONCRETE BARRIER WALL
S-SSMB-3	07-30-10	51” HALF SIZE SINGLE SLOPE CONCRETE BARRIER WALL (BRIDGE PIER PROTECTION)
S-SSMB-4	07-30-10	FLARED SINGLE SLOPE CONCRETE MEDIAN BARRIER WALL
S-SSMB-5		SINGLE SLOPE MEDIAN BARRIER WALL CATCH BASIN DETAIL
S-SSMB-6		GUARDRAIL ATTACHMENT TO SINGLE SLOPE CONCRETE BARRIER WALL

S-SSMB-7		FOOTING DETAILS FOR OVERHEAD SIGN STRUCTURE 32" MEDIAN BARRIER WALL
S-SSMB-8		FOOTING DETAILS FOR OVERHEAD SIGN STRUCTURE 51" MEDIAN BARRIER WALL
S-SSMB-9		SINGLE SLOPE BARRIER WALL FOR GRADE SEPARATED MEDIAN

TRAFFIC CONTROL APPURTENANCES

T-FAB-1	05-27-97	FLASHING YELLOW ARROW BOARD
T-FO-1		FIBER OPTIC AERIAL ENTRANCE DETAILS
T-FO-2		FIBER OPTIC UNDERGROUND ENTRANCE DETAILS
T-FO-3		FIBER OPTIC AERIAL CONNECTION DETAILS
T-FO-4		FIBER OPTIC PULL BOX, CABINET & POLE DETAILS
T-L-1	02-15-07	STANDARD LIGHTING DETAILS - FOUNDATIONS
T-L-1SA	07-29-04	STANDARD LIGHTING DETAILS FOR SINGLE ARM SUPPORTS
T-L-1TM		STANDARD LIGHTING DETAILS TENON MOUNTED OFFSET LIGHTING SUPPORTS
T-L-2	09-11-03	FOUNDATION DETAIL FOR LUMINAIRE MOUNTED ON CONCRETE MEDIAN BARRIER
T-L-3	04-15-96	STANDARD LIGHTING DETAILS - PULL BOXES
T-L-4	05-25-11	STANDARD LIGHTING DETAILS CONDUIT, CABLE INSTALLATION
T-M-1	11-01-11	DETAILS OF PAVEMENT MARKINGS FOR CONVENTIONAL ROADS AND MARKING ABBREVIATIONS
T-M-2	01-12-12	DETAILS OF PAVEMENT MARKINGS FOR CONVENTIONAL ROADS
T-M-3	09-19-91	MARKING STANDARDS FOR TRAFFIC ISLANDS, MEDIANS & PAVED SHOULDERS ON CONVENTIONAL ROADS
T-M-4	11-01-11	STANDARD INTERSECTION PAVEMENT MARKINGS
T-M-5	01-12-12	MARKING DETAILS FOR EXPRESSWAYS & FREEWAYS

T-M-6	01-12-12	MARKING DETAIL FOR EXPRESSWAY & FREEWAY INTERCHANGES
T-M-7	01-12-12	GORE MARKING DETAILS FOR EXPRESSWAY & FREEWAY INTERCHANGES
T-M-8	01-12-12	MARKING DETAILS FOR EXPRESSWAYS & FREEWAYS
T-M-9	11-01-11	MARKING DETAILS FOR RAMP INTERSECTIONS
T-M-10	11-01-11	SIGNING AND PAVEMENT MARKINGS FOR SHARED-USE PATHS
T-M-11	11-01-11	SIGNING AND PAVEMENT MARKINGS FOR BICYCLE LANES AND ROUTES ON RURAL ROADS
T-M-12	11-01-11	SIGNING AND PAVEMENT MARKINGS FOR URBAN BICYCLE LANES
T-M-13		SIGNING AND PAVEMENT MARKINGS FOR BICYCLE LANES
T-M-14	11-01-11	SIGNING AND PAVEMENT MARKINGS FOR BICYCLE LANES AT INTERSECTIONS
T-M-15		ASPHALT SHOULDER RUMBLE STRIP INSTALLATION DETAILS FOR NON-ACCESS CONTROLLED ROUTES
T-M-15A	11-01-11	ASPHALT SHOULDER RUMBLE STRIP INSTALLATION DETAILS FOR INTERSTATE AND ACCESS CONTROLLED ROUTES
T-M-16	11-01-11	ASPHALT SHOULDER RUMBLE STRIP INSTALLATION DETAILS FOR NON-ACCESS CONTROLLED ROUTES
T-PBR-1	06-30-09	INTERCONNECTED PORTABLE BARRIER RAIL
T-PBR-2	11-01-11	DETAIL FOR VERTICAL PANELS AND FLEXIBLE DELINEATORS
T-RR-1	11-01-11	TYPICAL PAVEMENT MARKING AT RAILROAD-HIGHWAY GRADE CROSSINGS AND RAILROAD ADVANCE WARNING SIGN
T-RR-2	11-01-11	STANDARD DRAWING FOR RAILROAD AND HIGHWAY CROSSING SIGNAL WITH GATE
T-RR-3	11-01-11	STANDARD DRAWING FOR RAILROAD-HIGHWAY CROSSING SIGNAL
T-RR-4	11-01-11	STANDARD DRAWING FOR TYPICAL CURB & GUTTER PLAN

		FOR RAILROAD-HIGHWAY CROSSING WITH OR WITHOUT GATES
T-RR-5	11-01-11	STANDARD DRAWING FOR RAILROAD-HIGHWAY CROSSING SIGNAL TYPICAL CANTILEVER SIGN
T-RR-6		TYPICAL SIGNING AND MARKING AT PASSIVE RAILROAD HIGHWAY GRADE CROSSINGS
T-S-6	02-12-91	STANDARD MOUNTING DETAILS - BOLTED EXTRUDED PANELS
T-S-7	02-12-91	HIGHWAY SHIELDS USED ON INTERSTATE AND U.S. NUMBERED ROUTES
T-S-8	07-15-91	HIGHWAY SHIELDS USED ON STATE NUMBERED ROUTES AND ARROWS
T-S-9	11-01-11	STANDARD LAYOUT - GROUND MOUNTED SIGNS
T-S-10	04-04-12	STANDARD MOUNTING DETAILS - FLAT SHEET SIGNS, ALUMINUM-STEEL DESIGN
T-S-11	06-06-11	DELINEATOR AND MILEPOST DETAILS
T-S-12	05-27-03	STANDARD STEEL GROUND MOUNTED SIGNS, BREAK-AWAY TYPE POST FOOTING DETAILS, SQUARE TUBES
T-S-13	05-27-01	STANDARD STEEL GROUND MOUNTED SIGNS, BREAK-AWAY TYPE POST FOOTING DETAILS, I-BEAMS
T-S-14	05-27-01	STANDARD STEEL GROUND MOUNTED SIGNS, BREAK-AWAY TYPE POST FOOTING DETAILS, WF-BEAMS
T-S-15	12-07-90	STANDARD CONDUIT & GROUND DETAILS FOR OVERHEAD & CANTILEVER SIGN STRUCTURES
T-S-16	11-01-11	GROUND MOUNTED ROADSIDE SIGN AND DETAILS
T-S-16A	11-01-11	GROUND MOUNTED ROADSIDE SIGN PLACEMENT DETAILS
T-S-17	10-26-96	STANDARD GROUND MOUNTED SIGN USING PERFORATED/KNOCKOUT SQUARE TUBE
T-S-18	05-27-01	END OF ROADWAY AND DEAD END SIGNS, METAL BARRICADES (TYPE III) & WORK ZONE SPEED SIGNS
T-S-19	07-29-91	STANDARD MEMBERS BENDAWAY SIGN SUPPORTS STEEL DESIGN

T-S-20	11-01-11	SIGN DETAILS
T-S-21		DETAILS FOR SIGN MOUNTS ON CONCRETE MEDIAN BARRIERS
T-SG-1	11-01-11	WOOD POLE, DETAILS FOR SPAN MOUNTED SIGNALS
T-SG-2	07-29-04	LOOP LEAD-INS CONDUIT AND PULL BOXES
T-SG-3	11-11-04	STANDARD NOTES AND DETAILS OF INDUCTIVE LOOPS
T-SG-3A		ALTERNATE DETECTION DETAILS
T-SG-4		SPAN WIRE AND MESSENGER CABLE DETAILS
T-SG-5	07-29-04	CONTROLLER CABINET DETAILS
T-SG-7	11-01-11	SIGNAL HEAD ASSEMBLIES AND PEDESTRIAN PUSH BUTTON SIGNS
T-SG-7A	11-01-11	TYPICAL SIGNAL HEAD PLACEMENT
T-SG-8	11-01-11	STRAIN POLE DETAILS FOR SPAN MOUNTED SIGNALS
T-SG-9	11-16-07	DETAILS OF CANTILEVER SIGNAL SUPPORT
T-SG-9A		MISCELLANEOUS SIGNAL DETAILS
T-SG-10	01-05-10	MAST ARM POLE AND STRAIN POLES FOUNDATION DETAILS
T-SG-11	07-29-04	MAINTENANCE OF EXISTING SIGNALS DURING HIGHWAY CONSTRUCTION
T-SG-12	11-01-11	TYPICAL WIRING FOR SIGNAL HEADS AND DETECTION LOOPS
T-SG-13	06-01-09	FLASHING BEACON DETAIL
T-WZ-10	04-02-12	ADVANCE ROAD WORK SIGNING ON HIGHWAYS AND FREEWAYS
T-WZ-11	03-13-09	ONE LANE CLOSURE DETAIL ON DIVIDED HIGHWAYS
T-WZ-12	03-13-09	ONE LANE CLOSURE DETAIL FOR BRIDGES ON DIVIDED HIGHWAYS
T-WZ-13	03-13-09	TWO-OUTSIDE LANE CLOSURE ON FREEWAY OR EXPRESSWAY

T-WZ-14	03-13-09	TWO-OUTSIDE LANE CLOSURE ON INTERSTATE AND EXPRESSWAY (PORTABLE BARRIER RAIL)
T-WZ-15	04-02-12	INTERIOR LANE CLOSURE ON FREEWAYS OR EXPRESSWAYS
T-WZ-16	03-13-09	LANE SHIFT ON DIVIDED HIGHWAYS AND FREEWAYS
T-WZ-18	03-13-09	SHOULDER CLOSURE DETAIL FOR FREEWAYS AND DIVIDED HIGHWAYS
T-WZ-19	04-02-12	MEDIAN CROSS-OVER DETAIL ON DIVIDED HIGHWAYS
T-WZ-20	12-18-99	GEOMETRIC MEDIAN CROSS-OVER DETAIL ON DIVIDED HIGHWAYS
T-WZ-21	03-15-11	LANE CLOSURE WITH LEFT HAND MERGE AND LANE SHIFT
T-WZ-30	09-01-05	TRAFFIC CONTROL 2-LANE, 2-WAY DIVERSION (40 MPH OR LESS)
T-WZ-31	09-01-05	TRAFFIC CONTROL 2-LANE, 2-WAY DIVERSION (GREATER THAN 40 MPH)
T-WZ-32	03-03-06	TRAFFIC CONTROL PLAN SIGNAL LAYOUT FOR TRAFFIC SIGNAL AT TWO LANE BRIDGE RECONSTRUCTION SITE
T-WZ-33	05-27-98	TRAFFIC CONTROL PLAN FOR CLOSE INTERSECTION CONDITIONS USING TRAFFIC SIGNAL AT TWO LANE BRIDGE RECONSTRUCTION SITE
T-WZ-34	09-01-05	TRAFFIC CONTROL PLAN GENERAL NOTES FOR TRAFFIC SIGNAL AT TWO LANE BRIDGE RECONSTRUCTION SITE
T-WZ-35	04-02-12	TRAFFIC CONTROL PLAN PAY ITEM AND SIGN DETAILS FOR TRAFFIC SIGNAL AT TWO LANE BRIDGE RECONSTRUCTION SITE
T-WZ-36	04-02-12	LANE CLOSURE ON LOW-VOLUME 2-LANE HIGHWAY
T-WZ-40	04-02-12	RIGHT LANE CLOSURES AT NEAR SIDE OF INTERSECTIONS
T-WZ-41	04-02-12	LEFT LANE CLOSURES AT NEAR SIDE OF INTERSECTIONS
T-WZ-42	04-02-12	CENTER LANE CLOSURES AT NEAR SIDE OF INTERSECTIONS
T-WZ-50	04-02-12	TRAFFIC CONTROL FOR SIGNALS ONLY PROJECTS ON 2 OR 3 LANE MAJOR ROUTES

T-WZ-51	04-02-12	TRAFFIC CONTROL FOR SIGNALS ONLY PROJECTS ON 4 OR 5 LANE MAJOR ROUTES
T-WZ-52	04-02-12	TRAFFIC CONTROL FOR SIGNALS ONLY PROJECTS ON 4 OR 5 LANE MAJOR AND MINOR ROUTES
T-WZ-53	04-02-12	TRAFFIC CONTROL FOR SIGNALS ONLY PROJECTS ON 4 OR MORE LANE DIVIDED MAJOR ROUTES
T-WZ-54	04-02-12	TRAFFIC CONTROL FOR SIGNALS ONLY PROJECTS ON 4 OR MORE LANE DIVIDED MAJOR ROUTES AND 4 OR MORE LANE MINOR ROUTES
T-WZ-55		SIDEWALK TRAFFIC CONTROL

EROSION PREVENTION AND SEDIMENT CONTROL

EC-STR-1	04-01-08	DEWATERING STRUCTURE
EC-STR-2	05-14-10	SEDIMENT FILTER BAG
EC-STR-3B	04-01-08	SILT FENCE
EC-STR-3C	04-01-08	SILT FENCE WITH WIRE BACKING
EC-STR-3D	04-01-08	ENHANCED SILT FENCE
EC-STR-3E	04-01-08	SILT FENCE FABRIC JOINING DETAILS
EC-STR-4	01-01-10	ENHANCED SILT FENCE CHECK (TRAPEZOIDAL DITCH)
EC-STR-4A	01-01-10	ENHANCED SILT FENCE CHECK (V-DITCH)
EC-STR-4B		ENHANCED SILT FENCE CHECK DETAILS
EC-STR-6	04-01-08	ROCK CHECK DAM
EC-STR-6A		ENHANCED ROCK CHECK DAM
EC-STR-7	04-01-08	SEDIMENT TRAP WITH CHECK DAM
EC-STR-8		FILTER SOCK
EC-STR-11	04-01-08	CULVERT PROTECTION TYPE 1
EC-STR-11A		CULVERT PROTECTION TYPE 2

EC-STR-12	04-01-08	ROCK SEDIMENT DAM
EC-STR-13	04-01-08	ROCK AND EARTH SEDIMENT EMBANKMENT
EC-STR-15	04-01-08	SEDIMENT BASIN
EC-STR-16	04-01-08	SEDIMENT BASINS RISER AND COLLAR APPURTENANCES
EC-STR-17	04-01-08	SEDIMENT BASIN EMBANKMENT DETAILS
EC-STR-19	04-01-08	CATCH BASIN PROTECTION
EC-STR-21	04-01-08	PERMANENT RIPRAP BASIN ENERGY DISSIPATOR
EC-STR-25	04-01-08	TEMPORARY CULVERT CROSSING, CONSTRUCTION EXIT, CONSTRUCTION FORD
EC-STR-27	04-01-08	TEMPORARY SLOPE DRAIN AND BERM
EC-STR-29	04-01-08	PERMANENT SLOPE DRAIN PIPE
EC-STR-30		INSTREAM DIVERSION (WITHOUT TRAFFIC)
EC-STR-30A		INSTREAM DIVERSION (WITH TRAFFIC)
EC-STR-31	04-01-08	TEMPORARY DIVERSION CHANNEL
EC-STR-31A	04-01-08	TEMPORARY DIVERSION CHANNEL DESIGN
EC-STR-32	04-01-08	TEMPORARY DIVERSION CULVERTS
EC-STR-33	04-01-08	SUSPENDED PIPE DIVERSION (DOWNSTREAM)
EC-STR-33A	04-01-08	SUSPENDED PIPE DIVERSION (UPSTREAM)
EC-STR-34	04-01-08	EROSION CONTROL BLANKET FOR SLOPE INSTALLATION
EC-STR-35	04-01-08	FILTER BERMS
EC-STR-36	04-01-08	TURF REINFORCEMENT MAT FOR CHANNEL INSTALLATION
EC-STR-37	04-01-08	SEDIMENT TUBE
EC-STR-38	04-01-08	FLOATING TURBIDITY CURTAIN
EC-STR-39	04-01-08	CURB INLET PROTECTION TYPE 1 & 2
EC-STR-39A	06-24-10	CURB INLET PROTECTION TYPE 3 & 4
EC-STE-40		CATCH BASIN FILTER ASSEMBLY FOR CIRCULAR

STRUCTURES

EC-STR-41	CATCH BASIN FILTER ASSEMBLY (TYPE 1)
EC-STR-41A	CATCH BASIN FILTER ASSEMBLY (TYPE 1) SLIPCOVER DETAILS
EC-STR-42	CATCH BASIN FILTER ASSEMBLY (TYPE 2)
EC-STR-42A	CATCH BASIN FILTER ASSEMBLY (TYPE 2) SLIPCOVER DETAILS
EC-STR-43	CATCH BASIN FILTER ASSEMBLY (TYPE 3)
EC-STR-43A	CATCH BASIN FILTER ASSEMBLY (TYPE 3) SLIPCOVER DETAILS
EC-STR-44	CATCH BASIN FILTER ASSEMBLY (TYPE 4)
EC-STR-44A	CATCH BASIN FILTER ASSEMBLY (TYPE 4) SLIPCOVER DETAILS
EC-STR-45	CATCH BASIN FILTER ASSEMBLY (TYPE 5)
EC-STR-45A	CATCH BASIN FILTER ASSEMBLY (TYPE 5) SLIPCOVER DETAILS
EC-STR-46	CATCH BASIN FILTER ASSEMBLY (TYPE 6)
EC-STR-46A	CATCH BASIN FILTER ASSEMBLY (TYPE 6) SLIPCOVER DETAILS
EC-STR-47	CATCH BASIN FILTER ASSEMBLY (TYPE 7)
EC-STR-47A	CATCH BASIN FILTER ASSEMBLY (TYPE 7) SLIPCOVER DETAILS
EC-STR-48	CATCH BASIN FILTER ASSEMBLY (TYPE 8)
EC-STR-48A	CATCH BASIN FILTER ASSEMBLY (TYPE 8) SLIPCOVER DETAILS
EC-STR-49	CATCH BASIN FILTER ASSEMBLY (TYPE 9)
EC-STR-49A	CATCH BASIN FILTER ASSEMBLY (TYPE 9) SLIPCOVER DETAILS
EC-STR-50	CATCH BASIN FILTER ASSEMBLY (TYPE 10)
EC-STR-50A	CATCH BASIN FILTER ASSEMBLY (TYPE 10) SLIPCOVER DETAILS

EC-STR-51		CATCH BASIN FILTER ASSEMBLY (TYPE 11)
EC-STR-51A		CATCH BASIN FILTER ASSEMBLY (TYPE 11) SLIPCOVER DETAILS
EC-STR-55	04-01-08	GABION CHECK DAM
EC-STR-56	04-01-08	GABION CHECK DAM DESIGN TABLES
EC-STR-57	04-01-08	GABION ASSEMBLY DETAILS
EC-STR-58	04-01-08	GABION ASSEMBLY DETAILS
EC-STR-59	04-01-08	GABION CHECK DAM GENERAL NOTES AND COMPONENT PROPERTIES
EC-STR-61		LEVEL SPREADERS
EL-W-1	05-27-96	DETAILS OF TREE WALLS
EL-W-2	05-27-01	STANDARD GRAVITY-TYPE RETAINING WALLS

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CHAPTER 2 – STANDARD STRUCTURE DRAWINGS

STRUCTURE DESIGN STANDARD DRAWINGS

BRIDGE APPURTENANCES ENGLISH (NEW STRUCTURES)

STD–1–1	07–31–00	BRIDGE RAILING CONCRETE PARAPET
STD–1–1SS	11-01-10	BRIDGE RAILING SINGLE SLOPE CONCRETE PARAPET
STD–1–2	03–28–08	SLIDER PLATE AND DECK DRAIN
STD-1-2SS		SLIDER PLATES FOR SINGLE SLOPE PARAPETS AND DECK DRAINS
STD–1– 3	07–31–00	STD. CONCRETE MEDIAN BARRIER
STD–1–3SS	11-01-10	STD. SINGLE SLOPE CONCRETE MEDIAN BARRIER
STD–1–4	01–05–01	SLIDER PLATES FOR MEDIAN BARRIER
STD-1-4SS		SLIDER PLATE ASSEMBLIES FOR SINGLE SLOPE MEDIAN BARRIER
STD–1–5	04–08–05	PAVEMENT AT BRIDGE ENDS
STD–1–6	04–28–97	BRIDGE END DRAIN W/ PABE
STD–1–7	07–31–00	BRIDGE END DRAIN W/ PABE
STD–1–8	05–01–95	BRIDGE END DRAIN 2’ X 8’ 7” W/PABE
STD–1–9	05–01–95	BRIDGE END DRAIN 4’ X 7” W/PABE
STD–1–10	03–28–94	BRIDGE END DRAIN W/O PABE
STD–1–11	05–21–99	BRIDGE END DRAIN W/O PABE
STD–1–12	03–28–94	BRIDGE END DRAIN 2’x8’7” W/O PABE
STD–1–13	03–28–94	BRIDGE END DRAIN 4’x8’7” W/O PABE
STD–2–1	11-01-10	BRIDGE MOUNTED INTERCONNECTED PORTABLE BARRIER RAIL
STD–2–2		VERTICAL PANEL DETAILS
STD–3–1	11-01-10	STRIPSEAL EXPANSION JOINT
STD–3–2	11-01-10	STRIPSEAL EXPANSION JOINT
STD–4–1	04–08–05	STD. PRECAST PRESTRESSED BRIDGE DECK PANELS GENERAL DETAILS

STD–4–2	04–08–05	STD. PRECAST PRESTRESSED BRIDGE DECK PANELS DESIGN CRITERIA
STD–4–3	03–02–02	STD.PRECAST PRESTRESSED BRIDGE DECK PANELS GENERAL DETAILS
STD–4–4	06–10–96	STD. PRECAST PRESTRESSED BRIDGE DECK PANELS CONSTRUCTION DETAILS
STD–5–1	10–25–93	STD. PILE DETAILS
STD–5–2	04–08–05	STD. PILE DETAILS
STD–6–1	11-01-10	STANDARD SEISMIC DETAILS
STD–6–2	11–07–94	STANDARD SEISMIC DETAILS
STD–7–1	11-01-10	STD. CONCRETE RAIL
STD–8–2	11-01-10	LIGHT STANDARD SUPPORT DETAILS
STD–8–2SS		SINGLE SLOPE PARAPET STANDARD LIGHT SUPPORT DETAILS
STD–8–3	09–01–91	MEDIAN BARRIER LIGHT STANDARD SUPPORT DETAILS
STD–8–3SS		SINGLE SLOPE MEDIAN BARRIER STANDARD LIGHT SUPPORT DETAILS
STD–8–4		SIGN, LUMINAIRE, AND TRAFFIC SIGNAL SUPPORTS
STD–9–1	10–07–08	REINFORCING BAR SUPPORT DETAILS FOR CONCRETE SLABS
STD–10–1	04–08–05	MISCELLANEOUS ABUTMENT AND DRAINAGE DETAILS
STD–11–1	08–13-02	BRIDGE RAILING W/ STRUCTURAL TUBING
STD–11–2		STANDARD CONCRETE CLASSIC RAIL
STD–14–1	10–15–08	STD. DETAILS AND INT. DIAPH.DETAILS FOR BULB – TEE BEAMS
STD–14–2	11-01-10	STD. DETAILS AND INT. DIAPH.DETAILS FOR I-BEAMS
STD–14–3	10–15–08	STD. DETAILS FOR PRESTRESSED BOX BEAMS

BRIDGE APPURTENANCES ENGLISH (BOX CULVERTS) (See Section 4-604.00)

STD–15–1	11–06–08	INDEX OF DRAWINGS AND TERMINOLOGY
STD–15–2	3–28–08	GENERAL NOTES
STD–15–3	02–28–03	DESIGN SECTION LIMITS

STD–15–4	12–07–01	TYPICAL SECTION AND DETAILS
STD–15–5	02–28–03	TYPICAL ELEVATION
STD–15–6	03–28–08	CURB AND RAIL DETAILS SKEW NOT LESS THAN 45 DEG.
STD–15–7	03–02–02	STANDARD EDGE BEAM DETAILS FOR FILLS GREATER THAN 3’ - 8”
STD–15–8	12–07–01	INTERIOR WALL END TREATMENTS
STD–15–9	02–28–03	TYPICAL WINGWALL DETAILS AND NOTES
STD–15–10	11-06-08	WINGWALL DIMENSIONS AND QUANTITIES
STD–15–11		WINGWALL DIMENSIONS AND QUANTITIES
STD–15–12	03–28–08	WINGWALL & SPECIAL RETAINING WALL DESIGN SECTION
STD–15–13		WINGWALL DESIGN SECTION
STD–15–14	02–28–03	BACKFILL AND DRAINAGE DETAILS
STD–15–15		BACKFILL AND DRAINAGE DETAILS
STD–15–16	12–07–01	PAVED OUTLET DETAIL
STD-15-16A		LOW FLOW CHANNEL CONSTRUCTION DETAILS FOR CULVERT INLET AND OUTLET
STD-15-17		DEBRIS DEFLECTION WALL
STD-15-18		DEBRIS DEFLECTION WALL
STD-15-19		SIDEWALK AND MISCELLANEOUS DETAILS
STD-15-20		WARPED SLOPE DETAIL
STD-15-21	03-02-02	STAGE CONSTRUCTION JOINT DETAIL (FILL ABOVE TOP OF SLAB NOT GREATER THAN 3’-8”)
STD-15-22	02-28-03	EXTENSION DETAILS
STD-15-23	12-07-01	EXTENSION DETAILS FOR SCOURED OUTLET
STD-15-24	12-07-01	END SECTION DETAILS
STD-15-25	11-01-10	PRECAST BOX CULVERT DETAILS
STD-15-26		PRECAST BOX CULVERT DETAILS
STD-15-27		PRECAST BOX CULVERT DETAILS
STD-15-28		PRECAST BOX CULVERT DETAILS

STD-15-29		PRECAST BOX CULVERT DETAILS
STD-15-30		STANDARD INTERNAL ENERGY DISSIPATOR FOR BOX AND PIPE CULVERTS
STD-15-35		BOX BRIDGE, 1 BARREL AT 6', CLEAR HTS. 3' - 6', 0 - 60' FILL
STD-15-36		BOX BRIDGE, 1 BARREL AT 8', CLEAR HTS. 3' - 4', 0 - 60' FILL
STD-15-37		BOX BRIDGE, 1 BARREL AT 8', CLEAR HTS. 5' - 8', 0 - 60' FILL
STD-15-38	09-19-06	BOX BRIDGE, 1 BARREL AT 10', CLEAR HTS. 4' - 6', 0 - 60' FILL
STD-15-39		BOX BRIDGE, 1 BARREL AT 10', CLEAR HTS. 7' - 10', 0 - 60' FILL
STD-15-40		BOX BRIDGE, 1 BARREL AT 12', CLEAR HTS. 4' - 7', 0 - 60' FILL
STD-15-41		BOX BRIDGE, 1 BARREL AT 12', CLEAR HTS. 8' - 12', 0 - 60' FILL
STD-15-42		BOX BRIDGE, 1 BARREL AT 14', CLEAR HTS. 5' - 7', 0 - 60' FILL
STD-15-43		BOX BRIDGE, 1 BARREL AT 14', CLEAR HTS. 8' - 11', 0 - 60' FILL
STD-15-44		BOX BRIDGE, 1 BARREL AT 14', CLEAR HTS. 12' - 14', 0 - 60' FILL
STD-15-45		BOX BRIDGE, 1 BARREL AT 16', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-15-46		BOX BRIDGE, 1 BARREL AT 16', CLEAR HTS. 9' - 12', 0 - 60' FILL
STD-15-47		BOX BRIDGE, 1 BARREL AT 16', CLEAR HTS. 13' - 16', 0 - 60' FILL
STD-15-48		BOX BRIDGE, 1 BARREL AT 18', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-15-49		BOX BRIDGE, 1 BARREL AT 18', CLEAR HTS. 9' - 13', 0 - 60' FILL
STD-15-50		BOX BRIDGE, 1 BARREL AT 18', CLEAR HTS. 14' - 18', 0 - 60' FILL
STD-15-55		BOX BRIDGE, 2 BARRELS AT 6', CLEAR HTS. 3' - 6', 0 - 60' FILL
STD-15-56		BOX BRIDGE, 2 BARRELS AT 8', CLEAR HTS. 3' - 4', 0 - 60' FILL
STD-15-57		BOX BRIDGE, 2 BARRELS AT 8', CLEAR HTS. 5' - 8', 0 - 60' FILL
STD-15-58		BOX BRIDGE, 2 BARRELS AT 10', CLEAR HTS. 4' - 6', 0 - 60' FILL
STD-15-59		BOX BRIDGE, 2 BARRELS AT 10', CLEAR HTS. 7' - 10', 0 - 60' FILL
STD-15-60		BOX BRIDGE, 2 BARRELS AT 12', CLEAR HTS. 4' - 7', 0 - 60' FILL
STD-15-61		BOX BRIDGE, 2 BARRELS AT 12', CLEAR HTS. 8' - 12', 0 - 60' FILL
STD-15-62		BOX BRIDGE, 2 BARRELS AT 14', CLEAR HTS. 5' - 7', 0 - 60' FILL
STD-15-63		BOX BRIDGE, 2 BARRELS AT 14', CLEAR HTS. 8' - 11', 0 - 60' FILL

STD-15-64		BOX BRIDGE, 2 BARRELS AT 14', CLEAR HTS. 12' - 14', 0 - 60' FILL
STD-15-65		BOX BRIDGE, 2 BARRELS AT 16', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-15-66		BOX BRIDGE, 2 BARRELS AT 16', CLEAR HTS. 9' - 12', 0 - 60' FILL
STD-15-67		BOX BRIDGE, 2 BARRELS AT 16', CLEAR HTS. 13' - 16', 0 - 60' FILL
STD-15-68		BOX BRIDGE, 2 BARRELS AT 18', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-15-69		BOX BRIDGE, 2 BARRELS AT 18', CLEAR HTS. 9' - 13', 0 - 60' FILL
STD-15-70		BOX BRIDGE, 2 BARRELS AT 18', CLEAR HTS. 14' - 18', 0 - 60' FILL
STD-15-75		BOX BRIDGE, 3 BARRELS AT 6', CLEAR HTS. 3' - 6', 0 - 60' FILL
STD-15-76		BOX BRIDGE, 3 BARRELS AT 8', CLEAR HTS. 3' - 4', 0 - 60' FILL
STD-15-77	12-07-01	BOX BRIDGE, 3 BARRELS AT 8', CLEAR HTS. 5' - 8', 0 - 60' FILL
STD-15-78	12-07-01	BOX BRIDGE, 3 BARRELS AT 10', CLEAR HTS. 4' - 6', 0 - 60' FILL
STD-15-79	12-07-01	BOX BRIDGE, 3 BARRELS AT 10', CLEAR HTS. 7' - 10', 0 - 60' FILL
STD-15-80		BOX BRIDGE, 3 BARRELS AT 12', CLEAR HTS. 4' - 7', 0 - 60' FILL
STD-15-81		BOX BRIDGE, 3 BARRELS AT 12', CLEAR HTS. 8' - 12', 0 - 60' FILL
STD-15-82		BOX BRIDGE, 3 BARRELS AT 14', CLEAR HTS. 5' - 7', 0 - 60' FILL
STD-15-83		BOX BRIDGE, 3 BARRELS AT 14', CLEAR HTS. 8' - 11', 0 - 60' FILL
STD-15-84		BOX BRIDGE, 3 BARRELS AT 14', CLEAR HTS. 12' - 14', 0 - 60' FILL
STD-15-85		BOX BRIDGE, 3 BARRELS AT 16', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-15-86		BOX BRIDGE, 3 BARRELS AT 16', CLEAR HTS. 9' - 12', 0 - 60' FILL
STD-15-87		BOX BRIDGE, 3 BARRELS AT 16', CLEAR HTS. 13' - 16', 0 - 60' FILL
STD-15-88		BOX BRIDGE, 3 BARRELS AT 18', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-15-89		BOX BRIDGE, 3 BARRELS AT 18', CLEAR HTS. 9' - 13', 0 - 60' FILL
STD-15-90		BOX BRIDGE, 3 BARRELS AT 18', CLEAR HTS. 14' - 18', 0 - 60' FILL
STD-15-95		SLAB BRIDGE, 1 BARREL AT 6', CLEAR HTS. 3' - 6', 0 - 60' FILL
STD-15-96		SLAB BRIDGE, 1 BARREL AT 8', CLEAR HTS. 3' - 4', 0 - 60' FILL
STD-15-97		SLAB BRIDGE, 1 BARREL AT 8', CLEAR HTS. 5' - 8', 0 - 60' FILL
STD-15-98		SLAB BRIDGE, 1 BARREL AT 10', CLEAR HTS. 4' - 6', 0 - 60' FILL

STD-15-99	02-28-03	SLAB BRIDGE, 1 BARREL AT 10', CLEAR HTS. 7' - 10', 0 - 60' FILL
STD-15-100	02-28-03	SLAB BRIDGE, 1 BARREL AT 12', CLEAR HTS. 4' - 7', 0 - 60' FILL
STD-15-101	02-28-03	SLAB BRIDGE, 1 BARREL AT 12', CLEAR HTS. 8' - 12', 0 - 60' FILL
STD-15-102		SLAB BRIDGE, 1 BARREL AT 14', CLEAR HTS. 5' - 9', 0 - 60' FILL
STD-15-103		SLAB BRIDGE, 1 BARREL AT 14', CLEAR HTS. 10' - 14', 0 - 60' FILL
STD-15-104		SLAB BRIDGE, 1 BARREL AT 16', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-15-105		SLAB BRIDGE, 1 BARREL AT 16', CLEAR HTS. 9' - 12', 0 - 60' FILL
STD-15-106		SLAB BRIDGE, 1 BARREL AT 16', CLEAR HTS. 13' - 16', 0 - 60' FILL
STD-15-107		SLAB BRIDGE, 1 BARREL AT 18', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-15-108		SLAB BRIDGE, 1 BARREL AT 18', CLEAR HTS. 9' - 13', 0 - 60' FILL
STD-15-109		SLAB BRIDGE, 1 BARREL AT 18', CLEAR HTS. 14' - 18', 0 - 60' FILL
STD-15-115	02-28-03	SLAB BRIDGE, 2 BARRELS AT 6', CLEAR HTS. 3' - 6', 0 - 60' FILL
STD-15-116	02-28-03	SLAB BRIDGE, 2 BARRELS AT 8', CLEAR HTS. 3' - 4', 0 - 60' FILL
STD-15-117	02-28-03	SLAB BRIDGE, 2 BARRELS AT 8', CLEAR HTS. 5' - 8', 0 - 60' FILL
STD-15-118	02-28-03	SLAB BRIDGE, 2 BARRELS AT 10', CLEAR HTS. 4' - 6', 0 - 60' FILL
STD-15-119	02-28-03	SLAB BRIDGE, 2 BARRELS AT 10', CLEAR HTS. 7' - 10', 0 - 60' FILL
STD-15-120	02-28-03	SLAB BRIDGE, 2 BARRELS AT 12', CLEAR HTS. 4' - 7', 0 - 60' FILL
STD-15-121	02-28-03	SLAB BRIDGE, 2 BARRELS AT 12', CLEAR HTS. 8' - 12', 0 - 60' FILL
STD-15-122	02-28-03	SLAB BRIDGE, 2 BARRELS AT 14', CLEAR HTS. 5' - 7', 0 - 60' FILL
STD-15-123	02-28-03	SLAB BRIDGE, 2 BARRELS AT 14', CLEAR HTS. 8' - 11', 0 - 60' FILL
STD-15-124	02-28-03	SLAB BRIDGE, 2 BARRELS AT 14', CLEAR HTS. 12' - 14', 0 - 60' FILL
STD-15-125	02-28-03	SLAB BRIDGE, 2 BARRELS AT 16', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-15-126	02-28-03	SLAB BRIDGE, 2 BARRELS AT 16', CLEAR HTS. 9' - 12', 0 - 60' FILL
STD-15-127	02-28-03	SLAB BRIDGE, 2 BARRELS AT 16', CLEAR HTS. 13' - 16', 0 - 60' FILL
STD-15-128	02-28-03	SLAB BRIDGE, 2 BARRELS AT 18', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-15-129	02-28-03	SLAB BRIDGE, 2 BARRELS AT 18', CLEAR HTS. 9' - 13', 0 - 60' FILL
STD-15-130	02-28-03	SLAB BRIDGE, 2 BARRELS AT 18', CLEAR HTS. 14' - 18', 0 - 60' FILL
STD-15-135		SLAB BRIDGE, 3 BARRELS AT 6', CLEAR HTS. 3' - 6', 0 - 60' FILL

STD-15-136		SLAB BRIDGE, 3 BARRELS AT 8', CLEAR HTS. 3' - 4', 0 - 60' FILL
STD-15-137		SLAB BRIDGE, 3 BARRELS AT 8', CLEAR HTS. 5' - 8', 0 - 60' FILL
STD-15-138		SLAB BRIDGE, 3 BARRELS AT 10', CLEAR HTS. 4' - 6', 0 - 60' FILL
STD-15-139		SLAB BRIDGE, 3 BARRELS AT 10', CLEAR HTS. 7' - 10', 0 - 60' FILL
STD-15-140		SLAB BRIDGE, 3 BARRELS AT 12', CLEAR HTS. 4' - 7', 0 - 60' FILL
STD-15-141		SLAB BRIDGE, 3 BARRELS AT 12', CLEAR HTS. 8' - 12', 0 - 60' FILL
STD-15-142		SLAB BRIDGE, 3 BARRELS AT 14', CLEAR HTS. 5' - 7', 0 - 60' FILL
STD-15-143		SLAB BRIDGE, 3 BARRELS AT 14', CLEAR HTS. 8' - 11', 0 - 60' FILL
STD-15-144		SLAB BRIDGE, 3 BARRELS AT 14', CLEAR HTS. 12' - 14', 0 - 60' FILL
STD-15-145		SLAB BRIDGE, 3 BARRELS AT 16', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-15-146		SLAB BRIDGE, 3 BARRELS AT 16', CLEAR HTS. 9' - 12', 0 - 60' FILL
STD-15-147		SLAB BRIDGE, 3 BARRELS AT 16', CLEAR HTS. 13' - 16', 0 - 60' FILL
STD-15-148	12-07-01	SLAB BRIDGE, 3 BARRELS AT 18', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-15-149	12-07-01	SLAB BRIDGE, 3 BARRELS AT 18', CLEAR HTS. 9' - 13', 0 - 60' FILL
STD-15-150	12-07-01	SLAB BRIDGE, 3 BARRELS AT 18', CLEAR HTS. 14' - 18', 0 - 60' FILL

BRIDGE APPURTENANCES ENGLISH (LRFD BOX CULVERTS) (See Section 4-604.00)

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STD-17-8	EDGE BEAM DETAILS FOR FILLS GREATER THAN 3' - 6"
STD-17-9	INTERIOR WALL END TREATMENTS
STD-17-10	TYPICAL WINGWALL DETAILS AND NOTES

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STD-17-12	WINGWALL DIMENSIONS AND QUANTITIES
STD-17-13	WINGWALL DIMENSIONS AND QUANTITIES
STD-17-14	WINGWALL DIMENSIONS AND QUANTITIES
STD-17-15	WINGWALL & SPECIAL RETAINING WALL DESIGN SECTION
STD-17-16	WINGWALL DESIGN SECTION
STD-17-17	BACKFILL AND DRAINAGE DETAILS
STD-17-18	BACKFILL DETAILS
STD-17-19	PAVED OUTLET DETAIL
STD-17-20	LOW FLOW CHANNEL CONSTRUCTION DETAILS FOR CULVERT INLET AND OUTLET
STD-17-21	DEBRIS DEFLECTION WALL FOR BOX BRIDGE
STD-17-22	DEBRIS DEFLECTION WALL FOR SLAB BRIDGE
STD-17-23	SIDEWALK AND MISCELLANEOUS DETAILS
STD-17-24	WARPED SLOPE DETAIL
STD-17-25	STAGE CONSTRUCTION JOINT DETAIL (FILL ABOVE TOP OF SLAB NOT GREATER THAN 3'-6")
STD-17-26	EXTENSION DETAILS
STD-17-27	EXTENSION DETAILS FOR SCOURED OUTLET
STD-17-28	END SECTION DETAILS
STD-17-29	PRECAST BOX CULVERT DETAILS
STD-17-34	INTERNAL ENERGY DISSIPATOR FOR BOX AND PIPE CULVERTS
STD-17-51	BOX BRIDGE, 1 BARREL AT 6', CLEAR HTS. 3' - 6', 0 - 60' FILL
STD-17-52	BOX BRIDGE, 1 BARREL AT 8', CLEAR HTS. 3' - 5', 0 - 60' FILL
STD-17-53	BOX BRIDGE, 1 BARREL AT 8', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-17-54	BOX BRIDGE, 1 BARREL AT 10', CLEAR HTS. 4' - 6', 0 - 60' FILL
STD-17-55	BOX BRIDGE, 1 BARREL AT 10', CLEAR HTS. 7' - 10', 0 - 60' FILL
STD-17-56	BOX BRIDGE, 1 BARREL AT 12', CLEAR HTS. 4' - 6', 0 - 60' FILL
STD-17-57	BOX BRIDGE, 1 BARREL AT 12', CLEAR HTS. 7' - 9', 0 - 60' FILL

STD-17-58	BOX BRIDGE, 1 BARREL AT 12', CLEAR HTS. 10' - 12', 0 - 60' FILL
STD-17-59	BOX BRIDGE, 1 BARREL AT 14', CLEAR HTS. 5' - 7', 0 - 60' FILL
STD-17-60	BOX BRIDGE, 1 BARREL AT 14', CLEAR HTS. 8' - 11', 0 - 60' FILL
STD-17-61	BOX BRIDGE, 1 BARREL AT 14', CLEAR HTS. 12' - 14', 0 - 60' FILL
STD-17-62	BOX BRIDGE, 1 BARREL AT 16', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-17-63	BOX BRIDGE, 1 BARREL AT 16', CLEAR HTS. 9' - 12', 0 - 60' FILL
STD-17-64	BOX BRIDGE, 1 BARREL AT 16', CLEAR HTS. 13' - 16', 0 - 60' FILL
STD-17-65	BOX BRIDGE, 1 BARREL AT 18', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-17-66	BOX BRIDGE, 1 BARREL AT 18', CLEAR HTS. 9' - 11', 0 - 60' FILL
STD-17-67	BOX BRIDGE, 1 BARREL AT 18', CLEAR HTS. 12' - 14', 0 - 60' FILL
STD-17-68	BOX BRIDGE, 1 BARREL AT 18', CLEAR HTS. 15' - 18', 0 - 60' FILL
STD-17-71	BOX BRIDGE, 2 BARRELS AT 6', CLEAR HTS. 3' - 6', 0 - 60' FILL
STD-17-72	BOX BRIDGE, 2 BARRELS AT 8', CLEAR HTS. 3' - 5', 0 - 60' FILL
STD-17-73	BOX BRIDGE, 2 BARRELS AT 8', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-17-74	BOX BRIDGE, 2 BARRELS AT 10', CLEAR HTS. 4' - 6', 0 - 60' FILL
STD-17-75	BOX BRIDGE, 2 BARRELS AT 10', CLEAR HTS. 7' - 10', 0 - 60' FILL
STD-17-76	BOX BRIDGE, 2 BARRELS AT 12', CLEAR HTS. 4' - 6', 0 - 60' FILL
STD-17-77	BOX BRIDGE, 2 BARRELS AT 12', CLEAR HTS. 7' - 9', 0 - 60' FILL
STD-17-78	BOX BRIDGE, 2 BARRELS AT 12', CLEAR HTS. 10' - 12', 0 - 60' FILL
STD-17-79	BOX BRIDGE, 2 BARRELS AT 14', CLEAR HTS. 5' - 7', 0 - 60' FILL
STD-17-80	BOX BRIDGE, 2 BARRELS AT 14', CLEAR HTS. 8' - 11', 0 - 60' FILL
STD-17-81	BOX BRIDGE, 2 BARRELS AT 14', CLEAR HTS. 12' - 14', 0 - 60' FILL
STD-17-82	BOX BRIDGE, 2 BARRELS AT 16', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-17-83	BOX BRIDGE, 2 BARRELS AT 16', CLEAR HTS. 9' - 12', 0 - 60' FILL
STD-17-84	BOX BRIDGE, 2 BARRELS AT 16', CLEAR HTS. 13' - 16', 0 - 60' FILL
STD-17-85	BOX BRIDGE, 2 BARRELS AT 18', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-17-86	BOX BRIDGE, 2 BARRELS AT 18', CLEAR HTS. 9' - 11', 0 - 60' FILL

STD-17-87	BOX BRIDGE, 2 BARRELS AT 18', CLEAR HTS. 12' - 14', 0 - 60' FILL
STD-17-88	BOX BRIDGE, 2 BARRELS AT 18', CLEAR HTS. 15' - 18', 0 - 60' FILL
STD-17-91	BOX BRIDGE, 3 BARRELS AT 6', CLEAR HTS. 3' - 6', 0 - 60' FILL
STD-17-92	BOX BRIDGE, 3 BARRELS AT 8', CLEAR HTS. 3' - 5', 0 - 60' FILL
STD-17-93	BOX BRIDGE, 3 BARRELS AT 8', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-17-94	BOX BRIDGE, 3 BARRELS AT 10', CLEAR HTS. 4' - 6', 0 - 60' FILL
STD-17-95	BOX BRIDGE, 3 BARRELS AT 10', CLEAR HTS. 7' - 10', 0 - 60' FILL
STD-17-96	BOX BRIDGE, 3 BARRELS AT 12', CLEAR HTS. 4' - 6', 0 - 60' FILL
STD-17-97	BOX BRIDGE, 3 BARRELS AT 12', CLEAR HTS. 7' - 9', 0 - 60' FILL
STD-17-98	BOX BRIDGE, 3 BARRELS AT 12', CLEAR HTS. 10' - 12', 0 - 60' FILL
STD-17-99	BOX BRIDGE, 3 BARRELS AT 14', CLEAR HTS. 5' - 7', 0 - 60' FILL
STD-17-100	BOX BRIDGE, 3 BARRELS AT 14', CLEAR HTS. 8' - 11', 0 - 60' FILL
STD-17-101	BOX BRIDGE, 3 BARRELS AT 14', CLEAR HTS. 12' - 14', 0 - 60' FILL
STD-17-102	BOX BRIDGE, 3 BARRELS AT 16', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-17-103	BOX BRIDGE, 3 BARRELS AT 16', CLEAR HTS. 9' - 12', 0 - 60' FILL
STD-17-104	BOX BRIDGE, 3 BARRELS AT 16', CLEAR HTS. 13' - 16', 0 - 60' FILL
STD-17-105	BOX BRIDGE, 3 BARRELS AT 18', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-17-106	BOX BRIDGE, 3 BARRELS AT 18', CLEAR HTS. 9' - 11', 0 - 60' FILL
STD-17-107	BOX BRIDGE, 3 BARRELS AT 18', CLEAR HTS. 12' - 14', 0 - 60' FILL
STD-17-108	BOX BRIDGE, 3 BARRELS AT 18', CLEAR HTS. 15' - 18', 0 - 60' FILL
STD-17-111	SLAB BRIDGE, 1 BARREL AT 6', CLEAR HTS. 3' - 6', 0 - 60' FILL
STD-17-112	SLAB BRIDGE, 1 BARREL AT 8', CLEAR HTS. 3' - 5', 0 - 60' FILL
STD-17-113	SLAB BRIDGE, 1 BARREL AT 8', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-17-114	SLAB BRIDGE, 1 BARREL AT 10', CLEAR HTS. 4' - 6', 0 - 60' FILL
STD-17-115	SLAB BRIDGE, 1 BARREL AT 10', CLEAR HTS. 7' - 10', 0 - 60' FILL
STD-17-116	SLAB BRIDGE, 1 BARREL AT 12', CLEAR HTS. 4' - 6', 0 - 60' FILL
STD-17-117	SLAB BRIDGE, 1 BARREL AT 12', CLEAR HTS. 7' - 9', 0 - 60' FILL
STD-17-118	SLAB BRIDGE, 1 BARREL AT 12', CLEAR HTS. 10' - 12', 0 - 60' FILL

STD-17-119	SLAB BRIDGE, 1 BARREL AT 14', CLEAR HTS. 5' - 7', 0 - 60' FILL
STD-17-120	SLAB BRIDGE, 1 BARREL AT 14', CLEAR HTS. 8' - 11', 0 - 60' FILL
STD-17-121	SLAB BRIDGE, 1 BARREL AT 14', CLEAR HTS. 12' - 14', 0 - 60' FILL
STD-17-122	SLAB BRIDGE, 1 BARREL AT 16', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-17-123	SLAB BRIDGE, 1 BARREL AT 16', CLEAR HTS. 9' - 12', 0 - 60' FILL
STD-17-124	SLAB BRIDGE, 1 BARREL AT 16', CLEAR HTS. 13' - 16', 0 - 60' FILL
STD-17-125	SLAB BRIDGE, 1 BARREL AT 18', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-17-126	SLAB BRIDGE, 1 BARREL AT 18', CLEAR HTS. 9' - 11', 0 - 60' FILL
STD-17-127	SLAB BRIDGE, 1 BARREL AT 18', CLEAR HTS. 12' - 14', 0 - 60' FILL
STD-17-128	SLAB BRIDGE, 1 BARREL AT 18', CLEAR HTS. 15' - 18', 0 - 60' FILL
STD-17-131	SLAB BRIDGE, 2 BARRELS AT 6', CLEAR HTS. 3' - 6', 0 - 60' FILL
STD-17-132	SLAB BRIDGE, 2 BARRELS AT 8', CLEAR HTS. 3' - 5', 0 - 60' FILL
STD-17-133	SLAB BRIDGE, 2 BARRELS AT 8', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-17-134	SLAB BRIDGE, 2 BARRELS AT 10', CLEAR HTS. 4' - 6', 0 - 60' FILL
STD-17-135	SLAB BRIDGE, 2 BARRELS AT 10', CLEAR HTS. 7' - 10', 0 - 60' FILL
STD-17-136	SLAB BRIDGE, 2 BARRELS AT 12', CLEAR HTS. 4' - 6', 0 - 60' FILL
STD-17-137	SLAB BRIDGE, 2 BARRELS AT 12', CLEAR HTS. 7' - 9', 0 - 60' FILL
STD-17-138	SLAB BRIDGE, 2 BARRELS AT 12', CLEAR HTS. 10' - 12', 0 - 60' FILL
STD-17-139	SLAB BRIDGE, 2 BARRELS AT 14', CLEAR HTS. 5' - 7', 0 - 60' FILL
STD-17-140	SLAB BRIDGE, 2 BARRELS AT 14', CLEAR HTS. 8' - 11', 0 - 60' FILL
STD-17-141	SLAB BRIDGE, 2 BARRELS AT 14', CLEAR HTS. 12' - 14', 0 - 60' FILL
STD-17-142	SLAB BRIDGE, 2 BARRELS AT 16', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-17-143	SLAB BRIDGE, 2 BARRELS AT 16', CLEAR HTS. 9' - 12', 0 - 60' FILL
STD-17-144	SLAB BRIDGE, 2 BARRELS AT 16', CLEAR HTS. 13' - 16', 0 - 60' FILL
STD-17-145	SLAB BRIDGE, 2 BARRELS AT 18', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-17-146	SLAB BRIDGE, 2 BARRELS AT 18', CLEAR HTS. 9' - 11', 0 - 60' FILL
STD-17-147	SLAB BRIDGE, 2 BARRELS AT 18', CLEAR HTS. 12' - 14', 0 - 60' FILL

STD-17-148	SLAB BRIDGE, 2 BARRELS AT 18', CLEAR HTS. 15' - 18', 0 - 60' FILL
STD-17-151	SLAB BRIDGE, 3 BARRELS AT 6', CLEAR HTS. 3' - 6', 0 - 60' FILL
STD-17-152	SLAB BRIDGE, 3 BARRELS AT 8', CLEAR HTS. 3' - 5', 0 - 60' FILL
STD-17-153	SLAB BRIDGE, 3 BARRELS AT 8', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-17-154	SLAB BRIDGE, 3 BARRELS AT 10', CLEAR HTS. 4' - 6', 0 - 60' FILL
STD-17-155	SLAB BRIDGE, 3 BARRELS AT 10', CLEAR HTS. 7' - 10', 0 - 60' FILL
STD-17-156	SLAB BRIDGE, 3 BARRELS AT 12', CLEAR HTS. 4' - 6', 0 - 60' FILL
STD-17-157	SLAB BRIDGE, 3 BARRELS AT 12', CLEAR HTS. 7' - 9', 0 - 60' FILL
STD-17-158	SLAB BRIDGE, 3 BARRELS AT 12', CLEAR HTS. 10' - 12', 0 - 60' FILL
STD-17-159	SLAB BRIDGE, 3 BARRELS AT 14', CLEAR HTS. 5' - 7', 0 - 60' FILL
STD-17-160	SLAB BRIDGE, 3 BARRELS AT 14', CLEAR HTS. 8' - 11', 0 - 60' FILL
STD-17-161	SLAB BRIDGE, 3 BARRELS AT 14', CLEAR HTS. 12' - 14', 0 - 60' FILL
STD-17-162	SLAB BRIDGE, 3 BARRELS AT 16', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-17-163	SLAB BRIDGE, 3 BARRELS AT 16', CLEAR HTS. 9' - 12', 0 - 60' FILL
STD-17-164	SLAB BRIDGE, 3 BARRELS AT 16', CLEAR HTS. 13' - 16', 0 - 60' FILL
STD-17-165	SLAB BRIDGE, 3 BARRELS AT 18', CLEAR HTS. 6' - 8', 0 - 60' FILL
STD-17-166	SLAB BRIDGE, 3 BARRELS AT 18', CLEAR HTS. 9' - 11', 0 - 60' FILL
STD-17-167	SLAB BRIDGE, 3 BARRELS AT 18', CLEAR HTS. 12' - 14', 0 - 60' FILL
STD-17-168	SLAB BRIDGE, 3 BARRELS AT 18', CLEAR HTS. 15' - 18', 0 - 60' FILL

BRIDGE APPURTENANCES ENGLISH (BRIDGE REPAIRS)

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SBR–2–116	01–04–96	GENERAL DETAILS FOR STRIPSEAL EXPANSION JOINT REPLACEMENTCONSTRUCTION DETAILS TYPES "A" THRU "J" - 1991
SBR–2–117	05–30–96	STRIPSEAL EXPEANSION JOINTS – REPLACEMENT CONSTRUCTION DETAILS TYPE "A" AND TYPE "B" - 1991
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SBR–2–130	01–04–96	DETAILS SHOWING PIER PROTECTION WITH NEW VERTICAL CONCRETE BARRIER - 1988
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SBR–2–132	01–04–96	DETAILS SHOWING GUARDRAIL ATTACHMENT AT BRIDGE ENDS EXISTING CONCRETE SLOPE FACE ENDPOST - 1989
SBR–2–133	01–22–02	DETAILS SHOWING GUARDRAIL ATTACHMENT AT BRIDGE ENDS TO EXISTING CONCRETE VERTICAL FACE ENDPOST – 1989
SBR–2–134	01–04-96	DETAILS SHOWING GUARDRAIL ATTACHMENT AT BRIDGE ENDS TO EXISTING CONCRETE VERTICAL FACE ENDPOST - 1989
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